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Direct Testimony and Schedules
Allen D. Krug

BEFORE THE OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE
MINNESOTA PUBLIC UTILITIES COMMISSION
STATE OF MINNESOTA

IN THE MATTER OF XCEL ENERGY'S PETITION FOR APPROVAL OF ITS 2023 ANNUAL FUEL FORECAST AND MONTHLY FUEL COST CHARGES	MPUC Docket No. E002/AA-22-179

OAH Docket No. 21-2500-40336

DIRECT TESTIMONY OF

ALLEN D. KRUG

On Behalf of

NORTHERN STATES POWER COMPANY

May 1, 2025

Exhibit___(ADK-1)

Policy

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Table of Contents

Schedules

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Allen D. Krug. My business address is 414 Nicollet Mall, Minneapolis, Minnesota 55401.

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

A. I am the Associate Vice President, State Regulatory Policy for Northern States Power Company – Minnesota, d/b/a Xcel Energy (Xcel Energy or the Company).

Q. FOR WHOM ARE YOU TESTIFYING?

A. I am testifying on behalf of the Company.

Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I have worked for Xcel Energy since 1998, initially as a Manager of Renewable Energy and Energy Contract Coordinator. I then served as a Regulatory Consultant for a number of years before becoming Regional Vice President, Regulatory Administration in 2008. I began my current position in 2013. Prior to joining the Company, I worked for over a decade at the Minnesota Department of Commerce (Department), first as a Statistical Analyst and later as a Supervisor in the Electric Regulatory Unit. My qualifications and experience are more fully described in Exhibit___(ADK-1), Schedule 1.

Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES?

A. In my current role, I develop regulatory strategy for Xcel Energy across North Dakota, South Dakota, and Minnesota.

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

A. I am the Company's policy witness in this proceeding, and in that role, I present the Company's overall case to the Minnesota Public Utilities Commission (Commission). I begin by explaining how this contested case came about, after an outage at the Prairie Island Nuclear Generating Plant (PINGP or Plant). That outage followed an October 2023 incident causing unintentional damage to a direct current (DC) cable bundle containing control cables (Event), resulting in a shutdown of the Plant. To inform the Administrative Law Judge's recommendation and the Commission's decision in this matter, I provide background on the Plant, the Event and the actions taken by the Company following the Event, and the issues that have been referred to the Administrative Law Judge in this contested case proceeding.

Second, I discuss the central question in this case, namely, whether Xcel Energy customers have paid more for power than they otherwise would have had the Event not occurred and, if so, should the Company be required to issue a refund of power costs to its customers. Answering this question requires not only quantifying any incremental power costs Xcel Energy may have incurred during the time the PINGP was not in service following the Event, but also understanding how much of the outage is appropriately attributable to the Event and quantifying any benefits or offsets that mitigate any such costs.

As I and other Company witnesses will discuss, the Company's actions with respect to PINGP, both prior to and following the Event, have been reasonable and consistent with sound utility practice. These actions have ensured that only prudently-incurred costs have been passed on to Xcel Energy customers. Moreover, to the extent any refund for the cost of purchased power during the

outage at PINGP is deemed appropriate, its calculation should be based on the best estimate of replacement power costs available and must account for the benefits customers received from the steps the Company took to avoid future outages that would result in customers paying for replacement power costs in the future. Further, a refund to customers, if any, must consider the benefits those customers have received from the Company's sound operations and the historical performance of the plant compared to other industry participants.

Finally, I introduce the Company's other witnesses in this proceeding, identifying the subject matters of their testimonies.

Q. HOW IS THE REMAINDER OF YOUR TESTIMONY STRUCTURED?

A. My testimony covers the following topics:

- *Section II*: I provide background information regarding the PINGP, the Event and the Company's actions following the Event, and the issues in this proceeding.
- *Section III*: I discuss the prudence standard, and how that standard should be applied in this proceeding, including a discussion of the policy and factual considerations that should guide the resolution of this matter.
- *Section IV*: I introduce the Company's other witnesses, describing the topics they address.

II. BACKGROUND

A. The Prairie Island Nuclear Generating Plant

Q. PLEASE DESCRIBE THE PINGP AND THE COMPANY'S HISTORICAL PERFORMANCE OF THE PLANT.

A. The Prairie Island Plant is a two-unit, nuclear-powered, electric generating station located in Red Wing, Minnesota. Since its units began operations in 1973 and 1974, the Plant has played a critical role in the fleet of resources Xcel Energy uses to serve our customers, providing carbon-free baseload service and operating 24 hours a day, seven days a week for extended periods of time to meet steady demand for electric power.

The Plant is among the most reliable generation resources in the Company's fleet. In 2022, the Plant's two reactors operated at a combined 96 percent capacity factor and have consistently achieved an average capacity factor of 90 percent or more. PINGP achieved a combined average capacity factor of 95 percent between 2018 and 2022. We have experienced some of the longest runs of uninterrupted operation in the history of our nuclear fleet, including a record-setting 670 days at PINGP Unit 1 from 2018 to 2020, and a record-setting run of 704 days on Unit 2 from 2019 to 2021.

Our customers have benefitted from the consistent and reliable operation of PINGP over the last five years. The strong performance of the units includes periods of extreme weather, including the 2019 polar vortex, the 2021 Winter Storm Uri, and others. The historical data indicates that the Company has operated PINGP prudently and, as Company witness Carl R. Bible discusses, has achieved higher levels of performance than the industry average. This strong performance has provided substantial benefits to our customers.

As I discuss below and as Company witness Nicholas J. Detmer discusses in more detail, the financial benefit to our customers of this superior performance at PINGP can be quantified by comparing the MWh generated during this time

period to the MWh Xcel Energy forecasted. Based on this comparison, the Company estimates that from 2018 through 2022, it generated approximately 2,577 GWh above our forecasted amount, resulting in substantial benefits to our customers, compared to normal operating performance over that time period.

B. The Event and the Company's Actions Following It

Q. PLEASE DESCRIBE THE EVENT AND THE ACTIONS TAKEN BY THE COMPANY IN RESPONSE TO THE EVENT.

A. The Event occurred during a cable-replacement project undertaken by the Company to keep PINGP in good working order. This work included replacing an underground cable that was experiencing significant degradation. On October 19, 2023, while performing this work, the work team inadvertently struck a bundle of control cables, severing the cables and leading PINGP Unit 1 to shut down (Unit 2 was already in a planned refueling outage at that time). As the Company discussed in its July 30, 2024 Reply Comments in this docket, attached as Exhibit___(ADK-1), Schedule 2, the affected DC control cables include 30 cables of 5 shielded twisted conductor pairs each, approximately 1,300 feet long. The cables supply control power to assets required to operate both units of Prairie Island at power.

The Company responded swiftly and appropriately to the Event, including by conducting an inspection of the damaged cables. That inspection determined that replacing rather than repairing these approximately 50-year-old cables was the most prudent action given the overall condition of the cable jackets, evidence of corrosion, and degraded insulation. These conditions put the cables at risk of water intrusion, creating a high probability that these cables would have failed during future plant operation if not discovered during the boring

activity, resulting in unplanned outages of both Units 1 and 2 in the future, as discussed by witness Bible. Further, as Company witness Allen L. Hiser discusses, the cables likely would have been subject to replacement during the Subsequent License Renewal (SLR) operating period, either in a planned shutdown due to degradation identified during testing and inspections (~20 percent likelihood) or following an unplanned dual unit outage after a spontaneous cable failure. Therefore, the Company worked to permanently replace the control cables, rather than simply repairing the damaged portion of them.

In addition, the Company utilized the offline time to perform a more thorough inspection of the Plant that could not have been performed while either unit of the PINGP was operating and conducting additional maintenance work that was scheduled for later planned outage dates. Examples of these activities included cooling water pump strainer inspections, control valve packing leak adjustments, condenser cleaning, Unit 1 containment crane maintenance, valve diaphragm replacement, and micro-processing card replacement on the Unit 2 turbine. Taking advantage of the outage to perform this work benefits our customers by avoiding the need to shut down both units in the future to do the required work. Company witness Detmer quantifies those benefits.

Q. WHEN DID PINGP UNIT 1 RETURN TO SERVICE?

A. Unit 1 returned to full service on January 30, 2024, meaning a total outage time of 103 days following the Event.

Q. DID THE COMPANY'S DECISION TO REPLACE THE DAMAGED CONTROL CABLES ALSO IMPACT THE LENGTH OF THE UNIT 2 OUTAGE?

A. Yes. Although Unit 2 was already in a planned refueling outage at the time of the Event, Unit 2 was not able to return to full service until the control cables were replaced and tested, adding 57 days to the length of the Unit 2 outage, as shown in Exhibit___(ADK-1), Schedule 3 (Xcel Energy Response to DOC Information Request No. 22 (e)).

C. 2023 AAA Report and this Contested Case Proceeding

Q. PLEASE EXPLAIN HOW THIS PROCEEDING CAME ABOUT.

A. This case began with the Company's March 1, 2024 Annual Fuel Clause True-Up and Compliance Report for fuel forecast and fuel-cost charges approved for the 2023 calendar year (2023 AAA Report), Docket No. E002/AA-22-179. In AAA Reports, utilities provide a quantification of the total energy costs *collected* from customers for the prior year, as well as the actual costs *incurred* by the utility for that year, and then indicate whether the utility has over-collected for the year (meaning a refund to customers is due) or under-collected (meaning a surcharge will be put in place). Through this "true-up" process and a review of the prudence of the utility's power costs, utilities only recover their prudently incurred costs for the power provided to customers – no more and no less.

In its 2023 AAA Report, Xcel Energy reported 2023 actual fuel cost collections of $1,091.8 million from its Minnesota customers. Further, the Company noted that $30.5 million was refunded to customers from July through September 2023 through a mid-year rate decrease. Therefore, net total Minnesota fuel collections were $1,061.3 million. The Company also reported its total actual fuel expense for 2023 of $935.3 million, meaning it over-collected fuel costs by $126.0 million for 2023 and the Company proposed to refund this amount to ratepayers.

On November 15, 2024, following submission of written comments by the Company, Department of Commerce, Office of the Attorney General – Residential Utilities Division, and Citizens Utility Board, the Commission issued its Order Approving 2023 Fuel-Clause True-Up Report, Requiring Additional Filings, Finding Imprudence, And Notice Of And Order For Hearing (Order). In the Order, regarding all issues not related to the outage at the PINGP, the Commission accepted Xcel Energy's 2023 AAA Report and approved the Company's proposed refund of $126 million to Minnesota ratepayers.

Also in the Order, the Commission addressed the outage at PINGP and the impact it may have had on the Company's power costs due to the unavailability of the Plant. The Commission stated that it was "persuaded that further record development is necessary" to determine the impact of the outage on the power costs paid by customers and whether potential benefits to customers or other offsets to any such power cost increases should be considered before requiring any refund of power costs incurred during the outage. Therefore, the Commission referred the issue of the potential impact of the outage on power costs to the Office of Administrative Hearings for a contested case proceeding, to develop a full record as to whether a further refund of power costs may be appropriate and, if so, a quantification of the appropriate refund amount.

In its January 31, 2025 Order Denying Petition for Reconsideration and Granting Request for Clarification (Clarifying Order), the Commission clarified that:

> the contested case issues are limited to the refund owed to ratepayers for costs that flow through the fuel-clause adjustment report. . . . The Commission further clarifies that the contested case shall also consider any benefits and offsets in determining the appropriate

refund and consider whether imprudence by Xcel Energy resulted in customers paying more for power than they otherwise would have paid such that a refund of power costs is appropriate.

Q. DOES THIS MEAN THERE ARE NO PRUDENCE-RELATED QUESTIONS RELEVANT TO THIS PROCEEDING?

A. No. As the Commission stated in its Clarifying Order, the Commission still intends to "consider any benefits and offsets in determining [an] appropriate refund and consider whether imprudence by Xcel Energy resulted in customers paying more for power than they otherwise would have paid." To fully consider those issues requires answering two separate questions:

1. What is the best estimate of any additional power costs Xcel Energy may have incurred during the outages of Units 1 and 2 due to the Event?
2. Are there benefits or offsets that mitigate any additional power costs in whole or in part?

To answer this second question requires examining the Company's operation of PINGP both prior to and during the outage. For example, Xcel Energy has a track record of not only prudent but exemplary performance at PINGP, that should be considered in determining the overall impact to customers. Further, the Company's prudent actions in response to the Event mitigated much of the net impact of the Event on customers, by proactively performing work that otherwise would have required future outages. I will discuss these issues at a high level and other Company witnesses provide additional detail.

III. THE PRUDENCE STANDARD AND ITS APPLICATION IN THIS PROCEEDING

Q. WHAT DOES IT MEAN FOR A UTILITY'S ACTIONS OR DECISIONS TO BE "REASONABLE AND PRUDENT?"

A. A regulatory agency such as the Commission determines prudence by examining whether, based on the information a utility had or reasonably should have had, it made reasonable decisions and took reasonable actions. The utility bears the burden of demonstrating the prudence of its decisions and actions by a preponderance of the evidence.

By its nature, the prudence standard recognizes that a range of actions may be reasonable. In addition, prudence is not determined by looking backward and considering an end result that was not known at the time a decision was made. Rather, prudence is determined by considering what a reasonable utility in similar circumstances would have done. As the Commission has stated:

> Generally, prudence is reasonable action taken in good faith based on knowledge available at the time of the action or decision. Actions taken in good faith are those taken without malicious intent, exercising the care that a reasonable person would exercise under the same circumstances at the time the decision was made. Prudence is not evaluated using the benefit of hindsight.[1]

[1] *In the Matter of the Petition of Northern States Power Company d/b/a Xcel Energy to Recover February 2021 Natural Gas Costs,* Docket No. G002/CI-21-610, Order Disallowing Recovery of Certain Natural Gas Costs and Requiring Further Action, p. 5 (October 19, 2022).

Q. HOW DOES THE PRUDENCE STANDARD APPLY IN THIS CASE?

A. As I discussed above, the Commission has not referred the question of Xcel Energy's prudence regarding the occurrence of the Event for record development in this proceeding. However, in determining whether and how much of a refund of power costs may be appropriate, the Administrative Law Judge and Commission must still examine and consider the Company's overall prudent operation of PINGP and the Company's reasonable and prudent work following the Event.

A. The Company's Work During the Outage

Q. DID THE COMPANY TAKE STEPS FOLLOWING THE EVENT THAT PROVIDE BENEFITS TO ITS CUSTOMERS?

A. Yes, and any customer refund of incremental power costs incurred during the outage must account for the benefits customers received from the prudent steps the Company took to avoid or minimize the length of future outages that would result in customers paying for replacement power costs in the future. These steps include replacing, rather than repairing, the DC cables and using the period in which the Plant was offline to pull forward and perform work that was already scheduled for a future outage. Company witnesses Hiser and Bible discuss this work and Company witness Detmer estimates the cost savings to our customers from this work.

B. Other Customer Benefits

Q. HAVE CUSTOMERS RECEIVED OTHER BENEFITS FROM XCEL ENERGY'S OPERATIONS AT PINGP?

A. Yes. A refund to customers, if any, should also consider the benefits customers have received from the Company's historical performance and overall operation

of the plant. As seen in Attachment A to the Company's July 30, 2024 Reply Comments in this docket and as discussed by Company witness Bible, the PINGP has enjoyed strong overall performance when compared to industry averages. That strong performance saved Xcel Energy customers millions of dollars in power costs compared to what they would have paid if PINGP had industry-standard operating performance rather than its exemplary historical performance, as discussed by Company witness Detmer.

Q. BUT THOSE BENEFITS ACCRUED TO CUSTOMERS PRIOR TO THE EVENT. WHY SHOULD THEY BE CONSIDERED BY THE ADMINISTRATIVE LAW JUDGE AND COMMISSION IN THIS PROCEEDING?

A. At the conclusion of this proceeding, the Commission must determine whether a refund is appropriate and, if so, in what amount. Fashioning a reasonable remedy requires recognizing the totality of the circumstances for both customers and the Company. With respect to PINGP, that means looking not just at the reasonable actions the Company took during the outage to minimize future costs, but also looking at the customer benefit of Xcel Energy's superior operation of the plant for years prior to the Event.

Q. HOW DOES THE COMPANY RECOMMEND THE COMMISSION RECOGNIZE THE VALUE TO CUSTOMERS OF THIS STRONG HISTORICAL PERFORMANCE?

A. Company witness Detmer estimates that PINGP produced 2,577 GWh over its forecasted output from 2018 through 2022, delivering over $50 million dollars in customer benefits – more than the total replacement power costs incurred following the Event. Company witness Detmer also explains that the Company compared PINGP's outage hours over the five-year period 2018-2023 (so including the outage at issue) to the industry-median outage hours over that

same time frame. Due to the impact of the outage, over that time period the Company acknowledges that PINGP exceeded the industry-median outage hours, but it did not exceed that average by 100 percent. That is, the industry also experienced outages at that time and an appropriate disallowance should account for the fact that perfection is not achievable. Rather, any disallowance should incorporate a comparison of historical performance to industry standards. Therefore, to acknowledge the Company's history of strong performance, and to recognize that perfection is not the standard, the Company recommends that the Commission apply a "performance adjustment" that holds the Company to an assumption of industry-median performance over that time frame, as Company witness Detmer sets out in his testimony.

C. Net Impact on Customers

Q. HAS THE COMPANY DETERMINED THE POTENTIAL NET IMPACT ON POWER COSTS PAID BY CUSTOMERS FROM THE COMPANY'S OPERATIONS AT PINGP?

A. Yes, and Company witness Detmer provides the support for those calculations. As Company witness Detmer explains, the best estimate of any incremental power costs incurred during the Event-related outage at PINGP is approximately $34.3 million for the Minnesota jurisdiction,[2] without accounting

[2] In its July 30, 2024 Reply Comments in this docket, Xcel Energy marked its estimated replacement power costs and its estimates of the value of the offsets and benefits that must be considered as "Not Public." As the Company explained, the Workpapers used to derive these figures contain Confidential and Proprietary forecast modeling inputs and outputs from PLEXOS®, including contract terms and forecasted market pricing. This competitively sensitive data has economic value to Xcel Energy, its customers, suppliers, and competitors. The knowledge of such information could adversely impact future contract negotiations, potentially increasing costs for these services for our customers. In the Company Direct Testimony, we are lifting the "Not Public" designation of the final dollar value outputs of the PLEXOS® modeling, for transparency and ease of public discussion. However, Xcel Energy continues to assert the "Not Public" nature of the underlying modeling inputs, as public dissemination of this data could cause economic harm to the Company and its customers.

for any other benefits that our customers received. Then, applying the most conservative case for avoided outage days attributable to the Company's work, Case 1 as discussed by Company witness Detmer, less the avoided costs for the additional pulled-forward work during the outage in 2023 and 2024, results in offsets that would lower any proposed customer refund to approximately $11.9 million.[3] Finally, accounting for the Company's strong historical performance at PINGP further reduces any proposed customer refund to approximately $6.1 million.

IV. INTRODUCTION OF WITNESSES

Q. PLEASE INTRODUCE THE WITNESSES THE COMPANY SPONSORS IN THIS PROCEEDING.

A. In addition to my Policy testimony, the Company sponsors the following witnesses:

- *Nicholas J. Detmer,* Xcel Energy's Director of Market Operations and Analytics, testifies on the incremental cost of power during the outage following the Event, as well as quantifying the value of the benefits and offsets that must be considered in determining whether any refund of power costs should be required.
- *Allen L. Hiser, Jr.,* Senior Principal Regulatory Services Engineer with Enercon, discusses the appropriateness of the Company's decision to replace, rather than repair, the damaged control cables at PINGP and the

[3] The other potential scenarios discussed by Company witness Detmer – Cases 2 and 3 – would have resulted in *more* outage days than occurred following the Event and would have resulted in future replacement power costs far exceeding the $34.3 million of estimated replacement power costs incurred following the Event.

potential that these cables would have been identified for replacement during the subsequent license renewal implementation and, if not, the potential of a cable failure to case a dual-unit trip.

- *Carl R. Bible,* Senior Electrical Consultant with Enercon, discusses the appropriateness of the Company's decision to replace, rather than repair, the damaged control cables at PINGP, the likelihood of cable failure had these cables not been replaced, and PINGP's strong historical performance.

V. CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. The testimony we provide demonstrates that the best estimate of the Minnesota jurisdictional incremental cost of power during the outage following the Event at PINGP is $34.3 million and that a conservative estimate of the value of the benefits and offsets realized by Minnesota customers due to the prudent operation of PINGP prior to the Event and the prudent work performed during the outage reduces any impact of the Event to Minnesota customers, such that any refund of power costs incurred due to the Event, should be no more than $6.1 million plus interest at the prime rate.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

Al Krug

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Minneapolis, MN 55401
allen.krug@xcelenergy.com
612-330-6270 (W)

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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July 30, 2024

—Via Electronic Filing—

Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

RE: REPLY COMMENTS
2023 ANNUAL FUEL FORECAST AND MONTHLY FUEL COST CHARGES
DOCKET NO. E002/AA-22-179

Dear Mr. Seuffert:

Northern States Power Company, doing business as Xcel Energy, submits this Reply to the May 15, 2024 Comments of the Minnesota Department of Commerce, Division of Energy Resources and the Office of the Attorney General – Residential Utilities Division regarding nuclear outages impacting our 2023 Annual Fuel Forecast True-up Report in the above-referenced docket.

Please note that portions of our Reply Comments are marked as "Not-Public." Certain data is considered to be "not public data" pursuant to Minn. Stat. § 13.02, Subd. 9, and is "Trade Secret" information pursuant to Minn. Stat. § 13.37, subd. 1(b) as this data derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by other persons who can obtain economic value from its disclosure or use.

Workpapers 1 and 2 Trade Secret in Entirety
Workpapers 1 and 2 provided with the Not Public version of this filing contain data classified as trade secret pursuant to Minn. Stat. § 13.37, subd. 1(b) and are marked as "Not Public" in its entirety. Pursuant to Minn. Rule, 7829.0500, subp. 3, the Company provides the following description of the excised material:

1. **Nature of the Material**: The Workpapers contain Confidential and Proprietary forecast modeling inputs and outputs from PLEXOS, including contract terms and forecasted market pricing.

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2. **Authors:** The data is output from PLEXOS and prepared under the direction of Nick Detmer.
3. **Importance:** The Workpapers contain competitively sensitive data related to modeling inputs and has economic value to Xcel Energy, its customers, suppliers, and competitors. The knowledge of such information could adversely impact future contract negotiations, potentially increasing costs for these services for our customers.
4. **Date the Information was Prepared**: The information was prepared in June 2024.

We have electronically filed this document with the Minnesota Public Utilities Commission, and copies have been served on the parties on the attached service list. If you have any questions regarding this filing please contact Rebecca Eilers at (612) 330-5570 or rebecca.d.eilers@xcelenergy.com or me at (612) 330-7681 or lisa.r.peterson@xcelenergy.com.

Sincerely,

/s/

LISA PETERSON
DIRECTOR, REGULATORY PRICING & ANALYSIS

Enclosures
c: Service List

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STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Katie J. Sieben	Chair
Hwikwon Ham	Commissioner
Valerie Means	Commissioner
Joseph K. Sullivan	Commissioner
John A. Tuma	Commissioner

IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY FOR APPROVAL OF THE 2023 ANNUAL FUEL FORECAST AND MONTHLY FUEL COST CHARGES	DOCKET NO. E002/AA-22-179 **REPLY COMMENTS**

INTRODUCTION

Northern States Power Company, doing business as Xcel Energy, submits this Reply to the May 15, 2024 Comments of the Minnesota Department of Commerce, Division of Energy Resources and Office of the Attorney General – Residential Utilities Division (OAG) regarding our 2023 Annual Fuel Forecast True-up Report in the above-referenced docket. Specifically, we respond to recommendations regarding unit outages at the Prairie Island Nuclear Generating Plant (PINGP).

Contrary to the Department and OAG's arguments, the Company's operation of PINGP in 2023 was prudent despite its extended outage. The cable damage that resulted in the Unit 1 shutdown was unintentional and occurred during work that was needed to maintain the plant. We acknowledge, however, that some of the oversight of and preparation for the project that resulted in the cable damage did not meet our nuclear operations team's high standard for planning and execution. As a result, following the event, we applied a highly self-critical approach to our root cause analysis and documentation with the NRC, which is a hallmark of operational excellence in the nuclear power industry. We have also implemented several corrective actions to ensure that future excavation projects will not impact plant reliability.

While we acknowledge that our execution fell short of perfection in this instance, this does not mean that the Company's overall operation of the plant was imprudent. Indeed, in the years leading up to the event, PINGP's performance placed it among the top nuclear plant operators in the country. For example, the Company achieved a 99.8 percent capacity factor for Unit 1 in 2021 and a 99.9 percent capacity factor for

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Unit 2 in 2022. And on a combined basis, PINGP achieved an average capacity factor of 95 percent between 2018 and 2022, which is well above both industry averages and our own forecasted capacity factors that we submit as part of our annual Fuel Clause Adjustment forecast. Our exemplary performance in these years yielded millions of dollars of additional benefit for our customers that should be considered by the Commission when evaluating the prudence of our operations in this docket.

Finally, there is no dispute that the Company responded swiftly and appropriately to the event by shutting down Unit 1, and later by mitigating negative impacts of the event by taking steps to benefit our customers by minimizing future outages. And consistent with our history of prudent operation and continuous improvement, the Company has updated its robust human performance improvement program to avoid similar events.

For these and the reasons below, the Company respectfully requests that the Commission approve the nuclear aspects of its 2023 Annual Fuel Forecast True-Up Report as filed. Alternatively, should the Commission wish parties to develop additional facts and expert analysis related to prudency or, if necessary, information related to the amount of replacement energy costs, the Company requests that the Commission order this proceeding be sent to a contested case hearing.

I. THE COMPANY HAS CONSISTENTLY OPERATED PINGP PRUDENTLY.

The Department and the OAG characterize the outages at PINGP as imprudent. In arriving at this conclusion, they rely on a handful of discovery responses or other documents, such as the Company's Licensee Event Report to the Nuclear Regulatory Commission, in which the Company acknowledges mistakes. They suggest that such acknowledgement demonstrates imprudence. This is not a reasonable or fair conclusion. As discussed below, the Company has taken extensive steps to improve its processes following this event. This type of improvement is made possible because the Company's nuclear operations team is highly self-critical and takes steps to learn from incidents like the event and consider ways that, with the benefit of hindsight, they can be avoided in the future. But making efforts to learn from past events to improve future outcomes is not the same thing as admitting imprudence. To the contrary, the plant's operating history shows that we are prudent operators and incurred replacement power costs that are reasonable and appropriately recoverable.

A regulatory agency such as the Commission determines prudence by examining whether, based on the information a utility had or reasonably should have had, it

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made reasonable decisions and took reasonable actions. Prudence is determined by considering what a reasonable utility in similar circumstances would have done. As the Commission has stated:

> [P]rudence is reasonable action taken in good faith based on knowledge available at the time of the action or decision. Actions taken in good faith are those taken without malicious intent, exercising the care that a reasonable person would exercise under the same circumstances at the time the decision was made. . . . Prudence is not evaluated using the benefit of hindsight.[1]

Therefore, by its nature, prudence does not require perfection, and even prudent decisions and operations can result in undesirable outcomes.[2] While unexpected events with negative consequences occur from time to time, the simple fact of any such event does not itself indicate imprudence. In the context of a forced outage, the prudence assessment should include—at a minimum—a review of operational history, industry best practices, and an acknowledgement that some amount of human error and unexpected outages are unavoidable and not alone indicative of imprudence. Here, the Company has operated and maintained PINGP consistent with sound utility practices over many years, and it responded to the cable event swiftly and consistent with industry best practice and our customers' interests.

A. The Company's Historical Performance Demonstrates Reasonable Operation.

The appropriate lens for prudence is whether PINGP was operated consistent with the performance of other utilities. Looking at the last five years of performance, which is the basis for our fuel cost forecast, PINGP has run at over a 90 percent capacity factor without the need for extensive outages and has been a reliable and cost-effective energy resource for our customers. PINGP achieved a combined average capacity factor of 95 percent between 2018 and 2022.[3] We have experienced some of the longest runs of uninterrupted operation in the history of our nuclear fleet, including a record-setting 670 days at PINGP Unit 1 from 2018 to 2020, and a record-setting run of 704 days on Unit 2 from 2019 to 2021.

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[1] See, e.g., *In the Matter of the Petition of Northern States Power Company d/b/a Xcel Energy to Recover February 2021 Natural Gas Costs*, Docket No. G002/CI-21-610, ORDER DISALLOWING RECOVERY OF CERTAIN NATURAL GAS COSTS AND REQUIRING FURTHER ACTION at 5 (Oct. 19, 2022).

[2] "[P]erfect performance is not possible nor required…. For example, the occurrence of a human error, does not, in and of itself, mean that a utility has failed to exercise a high standard of care in the maintenance of a base load generating unit." RE BALTIMORE GAS & ELECTRIC CO., 76 Md. P.S.C. 181 (1985).

[3] This includes a 99.8 percent capacity factor for Unit 1 in 2021 and a 99.9 percent capacity factor for Unit 2 in 2022.

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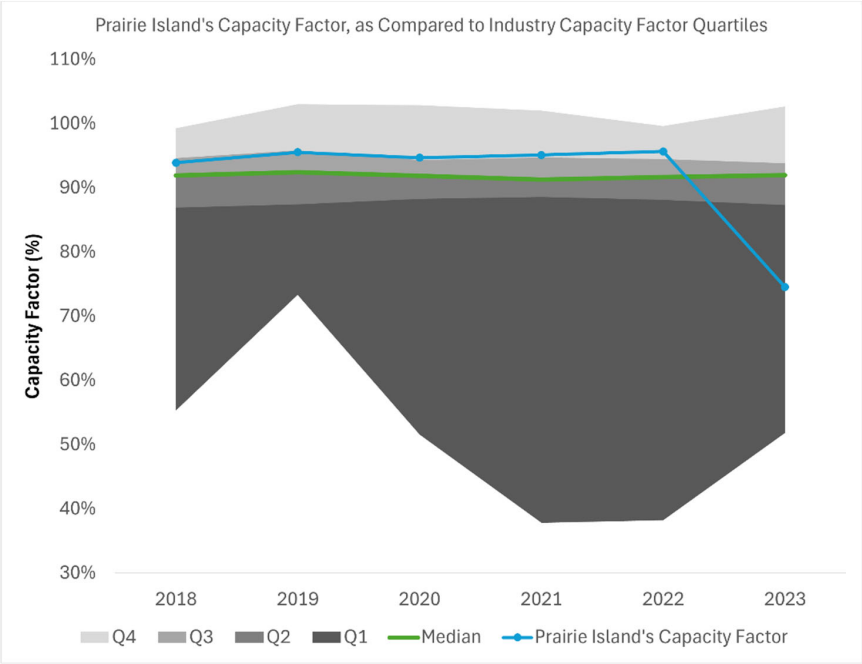
The graph below[4] shows PINGP's performance compared to the industry performance during this period, where Q4 is the top quartile and Q1 is the lowest quartile. This shows that PINGP's operation over the last five years was largely top quartile and—even with the drop-off in 2023—our average capacity rating over the past five years was consistent with the industry median of approximately 90%.

Figure 1



As this graph shows, our customers have benefitted from consistent and reliable operation of our nuclear fleet over the last five years. The strong performance of the units includes periods of extreme weather, including the 2019 polar vortex, the 2021 Winter Storm Uri, and others. From an overall operations perspective, the historical data indicates that the Company has operated PINGP prudently, providing substantial benefits to our customers.[5]

The financial benefit of this superior performance to our customers can be quantified by comparing the MWh generated during this time period to what we forecasted for

[4] See also Attachment A.
[5] This is further explained in the Company's recent request for a Certificate of Need to procure additional dry-cask storage at the PINGP filed on February 7, 2024, in Docket No. E002/CN-24-68, which discusses how customers have benefitted from the Company's operation of the PINGP as one of its most reliable generation resources.

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unit performance, based on reasonable expectations for performance. Based on this comparison, the Company estimates that from 2018 through 2022, it generated approximately 2,577 GWh above our forecasted amount, resulting in estimated benefits to customers of approximately $50.6 million compared to normal operating performance. These calculations are summarized in Attachment A.

In summary, the Commission should not take an isolated and one-sided look at a single incident, while ignoring the extensive benefits our customers have received from the Company's past operation of these units.

B. The Company's Actions In and Around the October Outage Demonstrate Reasonable Operation.

Not only does the historical operation of PINGP demonstrate the Company's overall prudent operation of the plant, but the preliminary record here supports that the Company's actions leading up to and in response to the event were consistent with its prudent management of PINGP. The cable-replacement project undertaken by the Company was needed to keep PINGP in good working order, including replacing an underground cable that was experiencing significant degradation. Performing this preventative work is consistent with prudent operation of a plant like PINGP. While performing this work, the team inadvertently struck a bundle of control cables, severing the control cables, and causing the outage. Although we learned several lessons from the event, the occurrence of such an incident does not itself support a finding of imprudence—particularly in the context of the Company's historical performance and response to the event.

The Company responded swiftly and appropriately to the event by shutting down Unit 1, and later by mitigating any negative impacts of the event by taking steps to benefit our customers. Upon investigating the event, the Company discovered that the damaged control cables were aging and at risk of water intrusion, which likely would have resulted in a shutdown of both units in the future; the Company therefore undertook to permanently replace the control cables. In order to make the most of the outage, the Company utilized the offline time to perform a more thorough inspection of the plant that could not have been performed while either unit of the PINGP was operating. Taking advantage of this outage to perform this work benefits our customers by avoiding the need to shut down both units in the future to do required work, as the Department acknowledges.

No party is taking the position that the replacement of the control cables was imprudent, that the length of the October outage was unreasonable given the replacement work that needed to be performed, or that the Company otherwise

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unreasonably responded to the incident. The crux of the issue is therefore that inadvertent damage to the control cables caused an outsized impact to the facility. But, as explained above, the unintentional occurrence of such an incident and its undesirable consequences does not alone support a finding of imprudence, particularly in light of the history of Prairie Island as one of the Company's most reliable generation resources in recent years.

C. The Company Maintains a Robust Human Performance Improvement Program at Its Nuclear Facilities.

The Company has also consistently taken prudent actions regarding human performance at its nuclear facilities by critically reviewing its actions after the fact. We strive for continuous improvement at these facilities, and when an incident occurs indicating that that process can be improved, the Company takes that opportunity.

As a result of the cable damage at Unit 1, for example, our procedures now delineate roles and responsibilities more clearly between project and field activity oversight. For example, our project management procedure now clarifies that the role of the project manager is to manage and oversee the project, but not to provide oversight of field activities, which is the role of a Nuclear Business Unit Leader (supervisor/manager level employee). Additionally, if a vendor/contractor has their own supervision in the field, an Xcel Energy Nuclear Business Unit Leader will also be in the field providing additional oversight. We are also more clearly reinforcing roles and responsibilities between contractors and Xcel Energy Employees in our contract agreements. Furthermore, we have established a requirement for positive documented confirmation that all underground assets have been identified for any excavation pathway. Training is being executed to communicate lessons learned and to discuss these changes. The goal is to learn from and prevent a similar incident in the future.

In alleging imprudence, the Department and OAG selectively leverage the Company's intentionally self-critical documentation. Not only is this an insufficient basis for finding imprudence, as discussed above, but it disincentivizes utilities from engaging in such reflective improvement activities, which are specifically designed to improve performance to the benefit of our customers. Instead, any prudence determination should be based on a fully developed record, which would require the Commission to send this proceeding to a contested case hearing.

***

In sum, the Company has acted reasonably and consistent with the utility industry and should not be held to a standard of perfection. The Company's operation leading up

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to and in response to this inadvertent human error supports that it is a prudent operator. If the Company's prudence remains in dispute, the Company requests that this proceeding be sent to a contested case so that a full record can be developed.

II. TOTAL REPLACEMENT POWER COSTS ARE NOT A REASONABLE BASIS FOR DISALLOWANCE IN THIS PROCEEDING.

As discussed above, the Company disagrees with the Department's and the OAG's conclusion that the Company acted imprudently in its operation of the PINGP. Should the Commission ultimately determine that the Company acted imprudently, the Company believes that the Department's and the OAG's recommended disallowance is excessive in light of industry performance and the Company's prudent operation of PINGP.

At the outset, the Company notes that calculation of replacement power costs is not an exact science. Actual costs incurred to serve customers during the outage period must be compared to the estimated costs that would have been incurred had the units been available during the same time period. This can only be estimated by reviewing energy market data and making assumptions regarding how these units would have performed under normal operating conditions.

The Department's recommendation for a disallowance in this proceeding is unreasonable because it assumes that the Company would have operated these facilities with 100 percent availability during the outage period. This is unrealistic based on both the Company's own consistently strong operation over the last five years, the Company's annual Fuel Clause Adjustment forecasts that are filed with the Commission, and on a comparison to industry performance. As a result, the Department's recommendation is not the most reasonable approach to calculating a refund, should one be ordered in this proceeding.

Indeed, given the applicable prudency standard, the performance expectation should be based on a range of reasonable utility performance, not perfection or even the Company's historical average. To the extent any refund is required, therefore, it should be reflective of the units' overall performance compared to other industry participants. For example, in order to derive an overall industry performance standard, the Company reviewed the PINGP's performance over the five-year period from 2018 through 2023 and compared this to overall nuclear industry performance over the same period. This analysis can be seen in Attachment B, showing that all industry participants experienced outages during this period, and that the Company's overall performance, including the outage, was superior to median industry

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performance. This data supports that holding the Company to a standard of perfection is inconsistent with reasonable utility performance.

While the Company believes it has operated the PINGP prudently and no disallowance is merited, any disallowance that is contemplated should be based on a reasonable standard for performance compared to other utilities, not perfect performance. Again, if the proper calculation of any refund remains in dispute, the Company requests this proceeding be sent to a contested case so that a full record can be developed.

III. REPLACEMENT POWER COST CALCULATIONS REQUIRE ADDITIONAL REFINEMENT.

As discussed above, calculating replacement power costs is an exercise in production cost modeling, where actual results are compared to an analysis of estimated costs had PINGP been available over the same time period. As it has done for all outage reporting in prior Fuel Clause dockets, the Company provided a preliminary estimate of replacement power costs by assuming that all lost energy would have been directly replaced through market purchases. This simplified analysis is performed to provide an initial, high-level look at the cost of replacement power. Here, the Company's preliminary estimate using the market as the benchmark, placed total replacement power costs for 2023 at **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]**.

However, a more accurate estimate can be determined, where the Company's generation portfolio, in addition to market purchases, is used to assess the impacts of the outage more fully. The Company uses the Plexos® model to perform this task. The Plexos model is the same model used to forecast annual fuel and purchased power costs in Fuel Forecast proceedings and provides a more robust estimate accounting for the operation of a complex system. Workpaper 1 provides a summary of this model and also provides a summary of the key assumptions used as inputs.[6]

Based on the results of this more robust analysis, the initial estimate of replacement power costs in this proceeding for 2023 should be revised, resulting in a reduction of total replacement power costs to **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]**.

Finally, as the Department acknowledges, any disallowance should be offset by the

[6] The Company notes that in the Sherco 3 proceeding, the OAG and Department both supported the use of this model as the appropriate tool for estimating the cost of replacement energy. *See* Docket No. E999/AA-18-373, et.al.

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customer benefits resulting from the Company's proactive use of the outage to perform necessary maintenance. Although the Department concludes that it does not currently have enough information to precisely quantify the amount of any offsetting future benefits, and recognizing that additional record development may further increase the offsets, the Department provides some credit for these future benefits by recommending disallowance of only 50 percent of the replacement power costs for the planned part of the outage. When we apply the more robust replacement power methodology to incorporate this information, the estimate of 2023 replacement power cost is reduced further to **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]** total. Attachment C provides a summary of the Company's proposed refinement of replacement power costs, including the additional adjustment recommended by the Department regarding future benefits. Workpaper 2 shows the detailed data supporting this summary.

Table 1
PLEXOS Prairie Island Replacement Energy Costs

Start Date	End Date	Base Case	Change Case	Net Cost Due to Outage	Refund Factor	Ratepayer Refund
		A	B	C=A-B	D	E=C*D
			[PROTECTED DATA BEGINS			
10/19/2023	10/31/2023	14,759,721			100%	
11/1/2023	11/30/2023	39,427,996			100%	
12/1/2023	12/14/2023	19,228,698			100%	
12/15/2023	12/31/2023	24,233,370			50%	
TOTAL PERIOD		**97,649,786**				
						PROTECTED DATA ENDS]

CONCLUSION

Through this Reply, we have demonstrated that, based on the record available at this time, the Company has historically acted reasonably and operated the facility consistent with, or better than, the majority of other nuclear plant operators in the country. It acted prudently leading up to and in response to the outage at PINGP. Moreover, to the extent any refund is required, its calculation should be based on the most precise calculation of replacement power costs available—the Plexos model—as well as a reasonable standard of performance compared to other utilities. If the parties continue to disagree regarding these issues, the Company recommends that the Commission order a contested case proceeding, where remaining issues of fact can be thoroughly vetted.

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Dated: July 30, 2024

Northern States Power Company

Northern States Power Company-Minnesota
Customer Benefits from Superior Performance

Docket No. E002/AA-22-179
Reply Comments
Attachment A, Page 1 of 1

	Generation (GWh) Prairie Island 1			Generation (GWh) Prairie Island 2			Performance ($) Prairie Island 1	Prairie Island 2	Total
Year	**Actual**	**Forecasted**	**delta**	**Actual**	**Forecasted**	**delta**	**Over(+) / Under(-)**	**Over(+) / Under(-)**	**Over(+) / Under(-)**
2018	4,192	3,994	197	4,792	4,290	502	$ 3,574,730	$ 8,952,773	$ 12,527,503
2019	4,774	4,527	247	4,366	4,001	365	$ 3,183,289	$ 5,053,817	$ 8,237,107
2020	4,334	4,117	216	4,750	4,435	316	$ 1,885,891	$ 2,670,522	$ 4,556,413
2021	4,775	4,527	248	4,300	4,090	211	$ 5,825,372	$ 5,303,536	$ 11,128,908
2022	4,365	4,252	112	4,773	4,609	164	$ 8,144,301	$ 6,000,575	$ 14,144,876
Total	**22,439**	**21,418**	**1,021**	**22,981**	**21,425**	**1,556**	**$ 22,613,583**	**$ 27,981,223**	**$ 50,594,807**

Northern States Power Company-Minnesota
2023 Nuclear Performance Calculations vs NEI

Docket No. E002/AA-22-179
Reply Comments
Attachment B, Page 1 of 1

NEI data
Calculation 2018 through 2023

Prairie Island 1	Bottom Quartile	Median Quartile	Top Quartile
operating hours	50,533	50,533	50,533
actual outage hours	232	232	232
cable failure outage hours	1,767	1,767	1,767
Industry performance %	7%	3%	1%
Industry outage hours	3,537	1,516	505
outage hours vs industry	-1,539	483	1,493
compared to Industry	-87.1%	27.3%	84.5%

Prairie Island 2	Bottom Quartile	Median Quartile	Top Quartile
operating hours	50,499	50,499	50,499
actual outage hours	463	463	463
cable failure outage hours	566	566	566
Industry performance %	7%	3%	1%
Industry outage hours	3,535	1,515	505
outage hours vs industry	-2,506	-486	524
compared to Industry	-442.7%	-85.8%	92.6%

Combined	Bottom Quartile	Median Quartile	Top Quartile
compared to Industry	-264.9%	-29.3%	88.5%

Northern States Power Company - Minnesota
Prairie Island Replacement Power Costs -
2023 Only

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Docket No. E002/AA-22-179
Reply Comments
Attachment C, Page 1 of 2

Replacement Power Cost Calculation Method Comparison

Protected Data is Shaded

Locational Marginal Price (LMP) Calculation Method

Prairie Island 1

Start Date	End Date	LMP Replacement Cost A	Avoided Unit Cost B	Net Cost Due to Outage C=A-B
			[PROTECTED DATA BEGINS	
10/19/2023	10/31/2023	4,751,197		
11/1/2023	11/30/2023	10,894,020		
12/1/2023	12/14/2023	5,187,005		
12/15/2023	12/31/2023	5,242,972		
TOTAL PERIOD		**26,075,194**		
			PROTECTED DATA ENDS]	

Prairie Island 2

Start Date	End Date	LMP Replacement Cost A	Avoided Unit Cost B	Net Cost Due to Outage C=A-B
			[PROTECTED DATA BEGINS	
12/8/2023	12/14/2023	2,349,558		
12/15/2023	12/31/2023	5,332,684		
TOTAL PERIOD		**7,682,242**		
			PROTECTED DATA ENDS]	

TOTAL PLANT

Start Date	End Date	LMP Replacement Cost A	Avoided Unit Cost B	Net Cost Due to Outage C=A-B
			[PROTECTED DATA BEGINS	
10/19/2023	10/31/2023	4,751,197		
11/1/2023	11/30/2023	10,894,020		
12/1/2023	12/14/2023	7,536,563		
12/15/2023	12/31/2023	10,575,656		
TOTAL PERIOD		**33,757,436**		
			PROTECTED DATA ENDS]	

Production Cost Model (PLEXOS) Calculation Method

TOTAL PLANT

Start Date	End Date	Base Case A	Change Case B	Net Cost Due to Outage C=A-B
			[PROTECTED DATA BEGINS	
10/19/2023	10/31/2023	14,759,721		
11/1/2023	11/30/2023	39,427,996		
12/1/2023	12/14/2023	19,228,698		
12/15/2023	12/31/2023	24,233,370		
TOTAL PERIOD		**97,649,786**		
			PROTECTED DATA ENDS]	

[PROTECTED DATA BEGINS

DELTA CALCULATION METHODS	

PROTECTED DATA ENDS]

Northern States Power Company - Minnesota
Prairie Island Replacement Power Costs -
2023 Only

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Docket No. E002/AA-22-179
Reply Comments
Attachment C, Page 2 of 2

Replacement Power Cost Calculation Method Comparison with DOC Recommended Refund Factor Applied

Protected Data is Shaded

Locational Marginal Price (LMP) Calculation Method

Prairie Island 1

Start Date	End Date	LMP Replacement Cost A	Avoided Unit Cost B	Net Cost Due to Outage C=A-B	Refund Factor D	Ratepayer Refund E=C*D
			[PROTECTED DATA BEGINS			
10/19/2023	10/31/2023	4,751,197			100%	
11/1/2023	11/30/2023	10,894,020			100%	
12/1/2023	12/14/2023	5,187,005			100%	
12/15/2023	12/31/2023	5,242,972			50%	
TOTAL PERIOD		26,075,194				
						PROTECTED DATA ENDS]

Prairie Island 2

Start Date	End Date	LMP Replacement Cost A	Avoided Unit Cost B	Net Cost Due to Outage C=A-B	Refund Factor D	Ratepayer Refund E=C*D
			[PROTECTED DATA BEGINS			
12/8/2023	12/14/2023	2,349,558			100%	
12/15/2023	12/31/2023	5,332,684			50%	
TOTAL PERIOD		7,682,242				
						PROTECTED DATA ENDS]

TOTAL PLANT

Start Date	End Date	LMP Replacement Cost A	Avoided Unit Cost B	Net Cost Due to Outage C=A-B	Refund Factor D	Ratepayer Refund E=C*D
			[PROTECTED DATA BEGINS			
10/19/2023	10/31/2023	4,751,197			100%	
11/1/2023	11/30/2023	10,894,020			100%	
12/1/2023	12/14/2023	7,536,563			100%	
12/15/2023	12/31/2023	10,575,656			50%	
TOTAL PERIOD		**33,757,436**				
						PROTECTED DATA ENDS]

Production Cost Model (PLEXOS) Calculation Method

TOTAL PLANT (Prairie Island 1 & 2)

Start Date	End Date	Base Case A	Change Case B	Net Cost Due to Outage C=A-B	Refund Factor D	Ratepayer Refund E=C*D
			[PROTECTED DATA BEGINS			
10/19/2023	10/31/2023	14,759,721			100%	
11/1/2023	11/30/2023	39,427,996			100%	
12/1/2023	12/14/2023	19,228,698			100%	
12/15/2023	12/31/2023	24,233,370			50%	
TOTAL PERIOD		**97,649,786**				
						PROTECTED DATA ENDS]

	[PROTECTED DATA BEGINS			
DELTA CALCULATION METHODS				
				PROTECTED DATA ENDS]

Docket No. E002/AA-22-179
Reply Comments
2023 PLEXOS Inputs Workpaper 1

2023 PLEXOS Inputs Workpaper 1 is being submitted as a live file.

Workpaper 1 Trade Secret in Its Entirety

Workpaper 1 provided with the Not Public version of this filing contain data classified as trade secret pursuant to Minn. Stat. § 13.37, subd. 1(b) and are marked as "Not Public" in its entirety. Pursuant to Minn. Rule. 7829.0500, subp. 3, the Company provides the following description of the excised material:

1. **Nature of the Material**: The Workpaper contains Confidential and Proprietary forecast modeling inputs and outputs from PLEXOS, including contract terms and forecasted market pricing.
2. **Authors:** The data is output from PLEXOS and prepared under the direction of Nick Detmer.
3. **Importance:** The Workpaper contains competitively sensitive data related to modeling inputs and has economic value to Xcel Energy, its customers, suppliers, and competitors. The knowledge of such information could adversely impact future contract negotiations, potentially increasing costs for these services for our customers.
4. **Date the Information was Prepared**: The information was prepared in June 2024.

Docket No. E002/AA-22-179
Reply Comments
2023 Prairie Island PLEXOS Results Workpaper 2

2023 Prairie Island PLEXOS Results Workpaper 2 is being submitted as a live file.

Workpaper 2 Trade Secret in Its Entirety

Workpaper 2 provided with the Not Public version of this filing contain data classified as trade secret pursuant to Minn. Stat. § 13.37, subd. 1(b) and are marked as "Not Public" in its entirety. Pursuant to Minn. Rule. 7829.0500, subp. 3, the Company provides the following description of the excised material:

1. **Nature of the Material**: The Workpaper contains Confidential and Proprietary forecast modeling inputs and outputs from PLEXOS, including contract terms and forecasted market pricing.
2. **Authors:** The data is output from PLEXOS and prepared under the direction of Nick Detmer.
3. **Importance:** The Workpaper contains competitively sensitive data related to modeling inputs and has economic value to Xcel Energy, its customers, suppliers, and competitors. The knowledge of such information could adversely impact future contract negotiations, potentially increasing costs for these services for our customers.
4. **Date the Information was Prepared**: The information was prepared in June 2024.

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☐ **Public Document – Not-Public Data Has Been Excised**
☒ **Public Document**

Xcel Energy		Information Request No.	22
Docket No.:	E002/AA-22-179		
Response To:	Minnesota Department of Commerce		
Requestor:	Stephen Collins		
Date Received:	March 25, 2024		

Question:
Topic: Prairie Island Unit 2 outages
Reference(s): True-up petition

(a) Please provide a detailed explanation for the Prairie Island Unit 2 "scheduled" outage listed in Part C, Attachment 5, page 3 of 3.
(b) Has this outage ended?
(c) What has the total duration of the outage been?
(d) If confirmed that it is a refueling outage, please compare the duration to all other planned refueling outages from 2019-2023.
(e) Please explain the large variance between the forecasted scheduled outage MWh and actual scheduled outage MWh for Prairie Island Unit 2.

Response:

(a) Prairie Island Unit 2 had a planned refueling outage (RFO) scheduled to begin October 6, 2023 and end December 8, 2023 (63 days). Some of the major activities included in the forecasted 63-day refueling outage were: refueling, 10-year reactor vessel in-service inspection, main generator "rotor-out' inspection, replacement of the reactor vessel clevis bolt and baffle former bolts, nuclear power monitoring instrumentation replacement, low-pressure steam drain piping replacement, condenser dogbone and extraction bellows replacement, diesel generator governor controls replacement, and diesel fuel oil storage tank piping replacement. Unexpected equipment issues occurred during the scheduled outage that led to the replacement of the 1 Reserve (1R) Transformer DC cable, reactor vessel seal, and a nuclear instrumentation detector. Associated duration additions are outlined in our (e) response.

While it is rare to have both of the plants' units offline at the same time, we took advantage of the dual unit outage to pull forward work to improve plant performance and potentially reduce future downtime. Specifically, we replaced one service water pipe and completed the inspection of a cooling water pump

and associated components. We also completed several items to potentially reduce future performance issues that could impact the plant. All of this work will improve the performance of the plant and simplify future refueling outages.

(b) Yes. The planned outage ended March 1, 2024.

(c) The total duration of the outage was 147.5 days.

(d) Yes, the specified outage was a refueling outage. Refueling outages include refueling activities, maintenance activities, capital projects and unplanned or emergent equipment repairs as necessary. This outage included planned replacements of the reactor vessel clevis bolt and baffle former bolts in addition to refueling which resulted in a longer forecasted scheduled refueling outage when compared to previous years' forecasted scheduled refueling outage durations.

Refueling outage forecast and actual durations between 2019 and 2023 are included in the table below.

Forecast Planned Refueling Outage Durations (days)					
Prairie Island Reactor	2019	2020	2021	2022	2023
Unit 1	-	24.8	-	24.7	-
Unit 2	25.0	-	26.8	-	63.0

Actual Refueling Outage Durations (days)					
Prairie Island Reactor	2019	2020	2021	2022	2023
Unit 1	-	24.7	-	26.0	-
Unit 2	23.2	-	28.4	-	147.5

(e) The following contributed to the 2023 variance between forecasted and scheduled Unit 2 MWhs and actual MWhs:

This refueling outage was planned to be 63 days to support additional project activities as outlined in our response in (a). The following contributed to the 84-day variance:

i. DC Cable Replacement 57 Days, 4 hrs

The following two equipment issues were unrelated to the cable issue, but were refueling outage issues that occurred during startup activities:

ii. Reactor Head O-Ring Leakage 16 Days, 21 hrs
iii. Nuclear Instrument Intermediate Range Detector Replacement 9 Days, 4 hrs

An additional total 1-day delay occurred over the course of the outage due to resource reallocation to support scope and schedule changes.

Preparer:	Amanda Jepson
Title:	Manager, Nuclear Regulatory Policy
Department:	Nuclear Policy Planning
Telephone:	612-228-0031
Date:	April 4, 2024