MINNESOTA
PUBLIC UTILITIES COMMISSION

Staff Briefing Papers

Meeting Date	**October 23, 2025**		**Agenda Item 5****
Company	All Electric Utilities		
Docket No.	E-999/CI-19-704		
	In the Matter of an Investigation into Self-Commitment and Self-Scheduling of Large Baseload Generation Facilities		
Issues	1. Have the utilities provided adequate information in the March 2024 and March 2025 compliance filings on self-commitment? 2. Should the utilities be required to provide additional information or take additional steps regarding self-commitment at this time? 3. Should the filing requirements for future years be modified?		
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✓ **Relevant Documents** — **Date**

Reports

Xcel Energy – 2023 Report & Attachments A, B, C	March 1, 2024
Minnesota Power – 2023 Report & Attachment 1, 2	March 1, 2024
Otter Tail Power Co. – 2023 Report & Attachment 2, 3	March 1, 2024
Xcel Energy – Correction to 2023 Annual Report	March 29, 2024
Otter Tail Power Co. – Amended Attachment 7	April 3, 2024
Xcel Energy – Correction to 2023 Annual Report	April 4, 2024
Otter Tail Power Co. – 2024 Report & Attachment 2, 3	February 27, 2025

✓ **Relevant Documents**	**Date**
Xcel Energy – 2024 Report & Attachments A, B, C	March 3, 2025
Minnesota Power – 2024 Report & Attachment 1, 2	March 3, 2025
Comments	
Department of Commerce – Comments – Public & Trade Secret	May 1, 2024
Department of Commerce – Comments – Public & Trade Secret	May 1, 2025
Xcel Energy – Reply Comments	May 29, 2025
Minnesota Power – Reply Comments	May 30, 2025
Minnesota Power – Supplemental Comments	August 21, 2025
Prior Commission Orders	
PUC – Order – Docket No. E-999/AA-18-373	November 13, 2019
PUC – Order Clarifying Filing Requirements and Schedule	May 4, 2020
PUC – Order Evaluating Self-Commitment and Self-Scheduling Reports	January 11, 2021
PUC – Order Accepting Reports and Setting Additional Requirements	December 1, 2021
PUC – Order	November 17, 2022
PUC – Order Accepting Annual Filings and Requiring Additional Filing	November 8, 2023

BACKGROUND

On November 13, 2019, the Commission ordered Xcel Energy (Xcel), Otter Tail Power Company (Otter Tail), and Minnesota Power (MP) to annually report on the use of self-commitment and self-scheduling of its baseload generation plants in the Midcontinent Independent System Operator (MISO) market. Since 2019, all three utilities have made significant changes to their self-commitment practices, with many coal-fired facilities switching to an economic or seasonal-commitment policy for MISO generation.

During the 2023 legislative session, Minnesota Statute §216B.2422 was amended to allow the Commission to order utilities to dispatch coal plants on a seasonal basis or establish an annual limit on carbon dioxide emissions from coal-fired electric generating units.

On March 1, 2024, the electric utilities filed their annual reports for 2023.

On or around March 3, 2025, the electric utilities filed their annual reports for 2024.

DISCUSSION

I. Background

The MISO markets identify the supply of electric generation available throughout the MISO regions, and the anticipated (and, in the real-time market, the actual) demand for electricity in each area, selecting generators for dispatch in a manner designed to minimize overall costs to the system while meeting reliability requirements.

MISO unit commitment is the process that determines which generators (and other resources) will operate to meet the upcoming need for electricity. MISO scheduling and dispatch sets the hourly output for each committed resource, using simultaneously co-optimized Security Constrained Unit Commitment and Security Constrained Economic Dispatch to clear and dispatch the energy and reserve markets.[1]

Self-commitment and self-scheduling are “commitment” and “dispatch” statuses available to electricity generators participating in the MISO Day Ahead wholesale power market.

Self-commitment allows a market participant to request that MISO commit a particular unit to run, regardless of market price. In MISO, this is referred to as “must run” status. Unless there is a reliability issue, MISO will commit the unit, at a minimum, to that unit’s specified “economic” minimum output level. The unit acts as a price taker, accepting whatever the clearing price for that period happens to be, which may be below the unit’s cost to generate. Depending on reliability needs and market prices, MISO may also commit the unit to production above

[1] Docket E-999/CI-19-704*, In the Matter of an Investigation into Self-Commitment and Self-Scheduling of Large Baseload Generation Facilities*, Order Clarifying Filing Requirements and Schedule, May 4, 2020, p. 2.

economic minimum.

Self-scheduling enables participants to submit hourly generation schedules to MISO. Self-scheduling does not guarantee dispatch but does predetermine minimum output levels. Units are price takers up to the self-scheduled generation amount but may be dispatched at higher levels up to the unit's economic maximum, depending on market pricing and reliability needs.

The Commission directed Minnesota Power, Otter Tail, and Xcel Energy to make compliance filings containing initial analysis of the impacts of self-committing and self-scheduling their generators, including the annual difference between production costs and corresponding prevailing market prices.[2] In response to information requests from parties, the utilities also provided hourly and monthly data.

At the Commission's October 10, 2019 Annual Automatic Adjustment (AAA) agenda meeting, the parties requested, and the Commission agreed, that the issues surrounding self-commitment and self-scheduling be moved to a separate docket to provide a more focused discussion for these issues. Thus, the Commission opened an investigation in this docket to require Minnesota Power, Otter Tail, and Xcel Energy to report their future self-commitment and self-scheduling analyses using a consistent methodology by including fuel cost and variable Operations and Maintenance (O&M) costs.

In its November 13, 2019 Order Accepting 2017-2018 Electric Reports and Setting Additional Requirements (November 13, 2019 Order),[3] the Commission:

8. Directed Minnesota Power, Otter Tail, and Xcel Energy to submit "an annual compliance filing analyzing the potential options for seasonal dispatch generally, and potential options and strategies for utilizing 'economic' commitments for specific coal-fired generating plants. The utilities shall include a specific explanation of barriers or limitations to each of these potential options, including but not limited to technical limits of the units and contract requirements (shared ownership, steam offtake contracts, minimum fuel supply requirements, (shared ownership, steam offtake contracts, minimum fuel supply requirements, etc.) as relevant, on March 1, 2020, and each year thereafter."

9. Opened the investigation in this docket and required Minnesota Power, Otter Tail, and Xcel Energy to report their future self-commitment and self-scheduling analyses. Additionally, ordered the utilities to use a consistent methodology by including fuel cost and variable O&M costs, matching the offer curve submitted to MISO energy markets.

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[2] Docket No. E-999/AA-18-373, *In the Matter of the Review of the 2017-2018 Annual Automatic Adjustment Report for All Electric Utilities*, Order Accepting 2016-2017 Reports and Setting Additional Requirements, February 7, 2019, Finding of Fact 4

[3] Docket No. E-999/AA-18-373, *In the Matter of the Review of the 2017-2018 Annual Automatic Adjustment Report for All Electric Utilities.*

10. Directed Minnesota Power, Otter Tail, and Xcel Energy to provide stakeholders the underlying data (work papers) used to complete their analyses, in a live Excel spreadsheet, including, at a minimum, the data points listed below for each generating unit, with the understanding that this may include protected data.

    Hourly data for all units:

    a) Date and hour
    b) Commit status (Null / Economic / Emergency / Must Run / Outage / Not Participating)
    c) Dispatch Status for Energy (Null / Economic / Self Schedule)
    d) Cleared MW
    e) Day ahead locational marginal price at unit node
    f) Real time MW adjustment
    g) Real time locational marginal price at unit node
    h) Day ahead dispatch minimum
    i) Real time dispatch minimum
    j) Fuel cost ($/MWh)
    k) Variable operations and maintenance costs ($/MWh)
    l) Day ahead locational marginal price representative of utility load zone
    m) Real time locational marginal price representative of utility load zone
    n) Whether Day Ahead Cleared = Day Ahead Dispatch Minimum (0 or 1)
    o) Actual production in MWh (for all 8,760 hours of the year)
    p) Day ahead MISO payment
    q) Real time MISO payment
    r) Net MISO energy payment
    s) Production costs ((J+K) * O)
    t) Net cost or benefit (R-S)

    Monthly or annual data for all units:

    u) Revenue from ancillary services (monthly)
    v) Fixed operations and maintenance costs (preferably monthly) or reasonable estimates in approximation thereof
    w) Capital revenue requirements (annual) or reasonable estimates in approximation thereof
    x) Average heat rate at economic minimum
    y) Average heat rate at economic maximum

Docket No. E-999/CI-19-704 was opened to investigate the use of self-commitment and self-scheduling by the regulated electric utilities in Minnesota. On December 13, 2019, the Commission issued its notice requesting procedural comments. On January 13, 2020, the parties filed initial comments on the scope of this investigation, with reply comments filed on January 28, 2020. In those comments, parties raised the question of the reporting period

required in the November 13, 2019 Order, with various parties suggesting different time periods for the initial comments, which were received on and around March 1, 2020, from Minnesota Power, Xcel Energy, and Otter Tail.

The Commission took up this matter on February 29, 2020 and provided clarification on filing requirements and deadlines.[4] The January 11, 2021 Commission Order approved Xcel and Otter Tail's 2019 reports and required MP to file additional information on its 2019 reports by February 1, 2021. Additional reporting requirements were implemented for 2020 reports and subsequent years, as outlined below:

- Include ancillary services revenues and any other make-whole payments as a separate column in all reporting on revenue from generation.
- Utilities should provide Unit Fuel Costs and Unit Variable Cost as separate line items.
- If a utility excludes any fuel costs from its MISO offer curves, the utility should also provide an analysis that includes all fuel costs, including those currently treated as fixed costs due to contractual terms.
- Utilities should include all preventative maintenance in O&M costs for reporting purposes.
- Any hours with unavoidable self-commitment should be labeled as such, with a cause listed for the self-commitment in that hour. (Testing, contract, dispatch of co-owned generation, etc.)
- Future analyses of self-commitment and self-scheduling should include all production costs including fuel, variable O&M, and other variable costs associated with the plant.
- To the extent not already provided, utilities should provide the following:
    i. Length of minimum decommit time for each unit;
    ii. Number of times in the analysis period that each unit incurred losses over a duration greater than or equal to its minimum decommit time;
    iii. Of the periods identified in (ii), the number of periods when losses were greater than the relevant startup cost (warm or cold startup cost, depending on the length of the period); and
    iv. Sum of losses in excess of startup cost that were incurred during periods identified in (iii).
- A complete analysis of the costs and benefits of economic or seasonal dispatch relative to self-scheduling at the following facilities:
    i. Boswell 3 and Boswell 4 – MP
    ii. Coyote Station – Otter Tail
    iii. Sherco 1 and Sherco 3 – Xcel Energy

[4] Order Clarifying Filing Requirements and Schedule, *In the Matter of the Review of the 2017–2018 Annual Automatic Adjustment Report for All Electric Utilities*, Docket No. E-999/AA-18-373, and *In the Matter of an Investigation into Self-Commitment and Self-Scheduling of Large Baseload Generation Facilities*, Docket No. E-999/CI-19-704. (May 4, 2020)

iv. Big Stone – Otter Tail

- Otter Tail shall provide a discussion of the options and costs of changing its current coal contract at Coyote Station and an evaluation of how potential costs of changing the contract compare to Coyote Station's past and forecast operating losses in Docket No. E-999/CI-19-704.
- Utilities with co-ownership of baseload generating units shall discuss options of economically committing those units within the terms of their partnership in the March 1, 2021 compliance report.
- Minnesota Power, Otter Tail, and Xcel Energy shall evaluate whether reducing minimum operating levels would benefit customers and include that evaluation and discussion in the March 1, 2021 compliance report.

The Commission's December 1, 2021 Order accepted the 2020 reports, approved Minnesota Power's amended 2019 report, and set the following additional requirements for future reports:

- Minnesota Power shall file the system strength study which it has commissioned a consultant to complete.
- Future reports shall contain the following information:
  - Information on annual carbon dioxide emissions.
  - Reasons for unavoidable self-commit status designations.
  - Plant startup conditions (e.g., cold, warm, or hot).
  - Equivalent Forced Outage Rate information to be tracked over time, and
  - Descriptions of changes to operating procedures and physical modifications to units to ensure plants are becoming more flexible to meet upcoming challenges, as applicable.
- The electric utilities shall develop a methodology, that is consistent to the extent possible, for splitting fuel costs such that one part depends on the megawatt-hour (MWh) production (i.e., variable cost) and the other part is independent of the MWh generated (i.e., fixed cost) and update the reporting template accordingly.
- Utilities shall work together to develop a consistent method for estimating the best-case and worst-case potential for economic commitment for each plant.

The Commission's November 17, 2022 Order accepted the 2021 reports, and set the following additional requirements for future reports:

- Xcel shall provide, in future reports, instances when greater economic commitment lead to lost revenue. If there were such instances, the utility should describe its strategy to weigh those lost revenues with the environmental benefits of lower emissions.
- Otter Tail shall include MISO and SPP market conditions in determining its self-commitment endorsement and show Net Benefit results in addition to the analysis provided by Otter Tail in Tables 6 and 8 of its 2021 filing.

- Otter Tail shall include in its 2023 and 2024 annual reports an update on its progress toward implementing the Total Plant Offer Optimization Plan and Combined Modeling of MISO Co-Owner Generation Shares Plan at Big Stone Plant and Coyote Station.
- Utilities shall provide avoided carbon dioxide emissions due to economic commitment along with plant level carbon dioxide emissions, using the Department's recommended method.
- Utilities shall provide Equivalent Forced Outage Rate (EFOR) information to be tracked over time.
- Utilities shall provide Energy (MWh) produced and curtailed from utility owned and contracted wind facilities monthly for each facility in subsequent filings in this docket.

In 2023, the Commission added no additional requirements for future utility filings.

II. 2023 UTILITY FILINGS

A. Xcel Energy

On March 1, 2024, Xcel Energy filed its annual report.

1. Self-Commitment and Self-Scheduling

Xcel analyzed the economic impact of its self-commit actions by comparing the MISO day-ahead and real time revenues and charges received from its self-commit approach for certain resources to production costs to determine margin.

In Fall 2020, Xcel began to suspend normal operations at King and Sherco 2 during non-peak seasons. However, in March 2022, MISO's Independent Market Monitor (IMM) raised concerns regarding the reasonableness of the plan to idle the plants. Since then, the units have been offered on an economic basis during the spring and fall. The Commission's November 8, 2023 Order required Xcel to develop a plan to operate King only during the months of June – August, and December – February, other than for emergency, reliability, or capacity obligations.

Xcel has dispatched nuclear on an economic basis in the day-ahead market since September 2019, treating fuel costs as fixed since June 2020. During 2023, Xcel did not self-schedule (i.e. set a fixed level of output for the plant) for any hours, but there were hours of self-commitment, as shown in Table 1 below.

Table 1: 2023 DART Margin for Non-Discretionary Self-Commit of Baseload Units[5]

Net MISO Payment - Production Costs - (cost)/benefit							
King	Sherco 1	Sherco 2	Sherco 3	Prairie Island 1	Prairie Island 2	Monticello	Total
$6,571,493	$26,399,794	$4,336,709	$13,264,792	$101,571,861	$90,461,563	$141,830,230	$384,436,441

Net MISO Payment - Total Production Costs including Remaining Unit Fuel Costs - (cost)/benefit							
King	Sherco 1	Sherco 2	Sherco 3	Prairie Island 1	Prairie Island 2	Monticello	Total
$6,571,493	$18,944,338	$3,540,164	$12,862,394	$70,681,297	$61,904,747	$106,648,754	$281,153,188

In evaluating self-commitment, Xcel excluded unavoidable self-commitment, such as mandatory resource testing, offtake contract requirements, system reliability, and maintenance outages, which are noted in Attachments A & B. The analysis only considered strategic self-commitment.

Based on its analysis, Xcel believed that the lack of multi-day commitment led to less assurance that the market will commit and de-commit baseload resources with slower start-up and longer minimum down times in an optimal manner and continued to advocate for a multi-day commitment process.

2. Avoided Carbon Dioxide Emissions

Table 2 illustrates avoided and actual CO2 emissions by unit.

Table 2: 2023 CO2 Emissions By Unit[6]

Unit	Actual Tons	Avoided Tons
King	1,094,107	1,728,499
Sherco 1	3,205,467	405,743
Sherco 2	1,390,671	463,488
Sherco 3	1,925,692	107,850

3. Minimum Operating Levels and other Plant changes

Xcel found that reducing minimum required load from 260 MW to 215 MW produced $77,768 in customer benefits in 2023. In December 2023, Sherco 2 ceased generation and entered retirement status. With the renewable energy transition, the remaining coal units created a Seasonal Dispatch Best Practices document to address maintenance, layup, and equipment management during extended shutdowns. Additionally, Xcel continued to evaluate opportunities to provide resource flexibility to MISO.

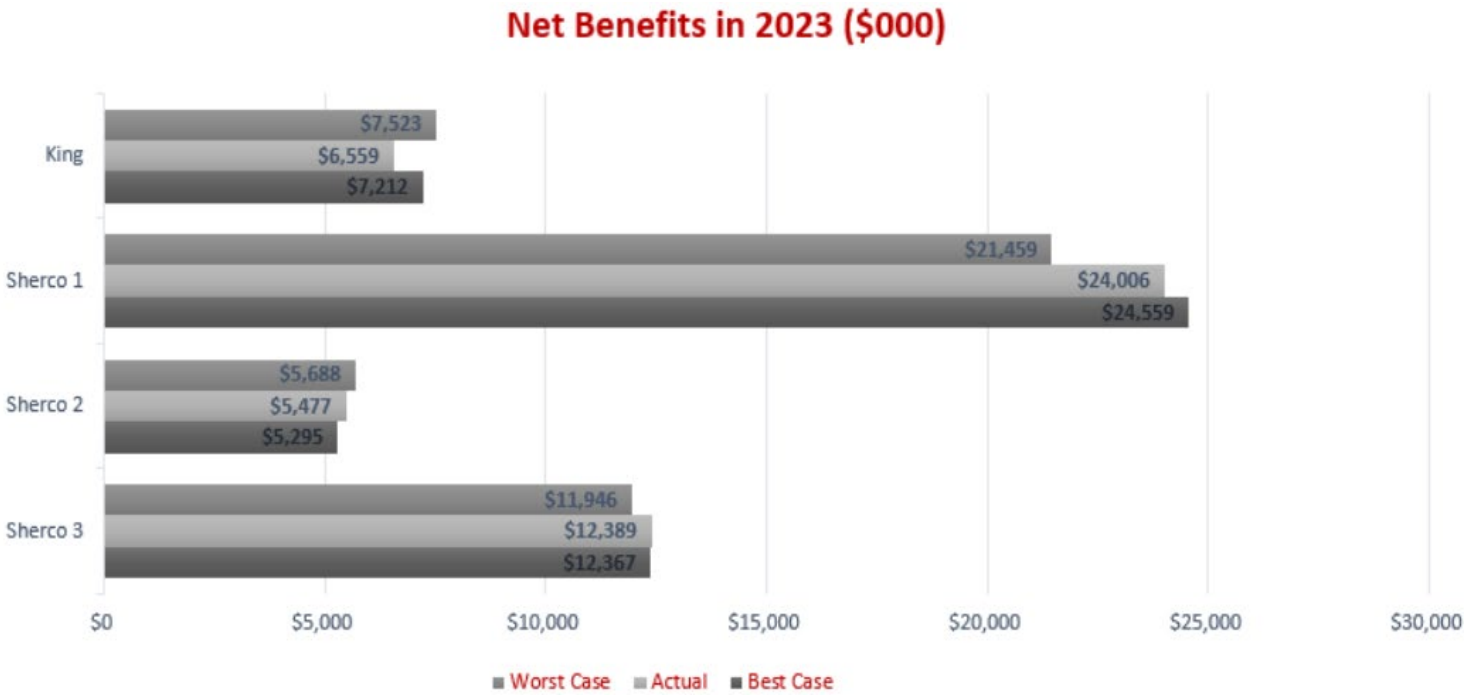
[5] Xcel 2023 Petition, at 3.

[6] Xcel 2023 Petition, at 9.

4. Best and Worst Case Analysis

Xcel agreed to use a year-round economic commitment scenario as "Best Case" and a year-round self-commitment/must run scenario as "Worst Case". Table 3 illustrates the results of these scenarios.

Table 3: Unit Day Ahead Margins in Best, Worst And Actual Cases[7]



5. Economic & Seasonal Dispatch at Sherco 1 & 3

Xcel and Southern Minnesota Municipal Power Agency (SMMPA) operate Sherco 3 under a joint operating agreement.

SMMPA terminated the Coordination agreement with Xcel on December 1, 2023, which effectively returned the companies to the original joint operating agreement. Under the agreement, each partner is its own Market Participant in managing their pro-rata offer of the plant to MISO.

Regarding Sherco 1, Xcel received a revised air permit in the third quarter of 2023, which removed synthetic minor PSD limits that previously applied to the Auxiliary Boilers. As of January 2024, the Auxiliary Boilers are not limited in their operation on both gas and fuel oil.

6. Seasonal Dispatch Plans for King and Sherco 2

In 2023, King and Sherco 2 did not operate on a seasonal basis; therefore no seasonal analysis

[7] Xcel 2023 Petition, at 8.

was performed. Nonetheless, the units were unable to be idled during the spring of 2023 and were cleared for capacity in the 2022-2023 Planning Resource Auction (PRA). Additionally, Sherco 2 retired on December 31, 2023.

In November 2023, Xcel filed a seasonal operational plan for the King plant, which included a social cost of carbon (SCC) for energy offers during the months of March – May, and September – November. The Commission approved the plan on January 12, 2024.[8]

B. Xcel Energy – Reply Comments

Xcel was notified by the Department that Attachment E inadvertently provided 2022 Equivalent Forced Outage Rates and Attachment F did not include wind facility production by month. As a result, Xcel provided modified Attachments E and F in reply comments.

Additionally, Xcel indicated that the best and worst-case scenario analysis would continue to yield results with decreasing value and was supportive of updating the reporting parameter requirement or eliminating it altogether.

C. Otter Tail Power Co.

On March 1, 2024, Otter Tail filed its annual report.

On April 3, 2024, Otter Tail filed an amendment to monthly wind curtailment data.

1. Self-Commitment Requirements

Otter Tail noted that both Big Stone and Coyote were part of its accredited capacity, and so it cannot offer either on a seasonal basis.

Coyote Station is co-owned by Otter Tail, Minnkota Power Cooperative, Montana Dakota Utilities, and Northwestern Energy, and operates in both MISO and SPP. Since May 2021, it has been economically decommitted. However, since much of its coal costs are considered fixed for the purposes of dispatch, there are relatively few hours throughout the year where it did not make economic sense to operate the plant.

Big Stone is co-owned by Otter Tail, Montana Dakota Utilities, and Northwestern Energy, and similarly operates in both SPP and MISO. Big Stone may be economically dispatched when all owners agree. As all fuel costs are considered variable, it is more frequent that market prices are below variable operating costs.

Otter Tail also noted the MISO single-day commitment and dispatch process, which may artificially inflate costs of operating the plant.

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[8] Docket E-999/CI-19-704*, In the Matter of an Investigation into Self-Commitment and Self-Scheduling of Large Baseload Generation Facilities*, Notice of Approval of Compliance Filing, January 12, 2024.

2. Otter Tail Specific Reporting

Otter Tail evaluated its mine-mouth coal contract at Coyote Station but found that there is little scope for modification to address fluctuating market conditions. Otter Tail noted that changes would require agreement with the mine-owner/operators and plant co-owners, plus potentially the mine-owner's lenders.

3. Carbon Emissions

Table 4 illustrates Otter Tail's avoided and actual CO2 emissions.

Table 4 – Otter Tail Carbon Dioxide Emissions[9]

Unit	Actual Tons	Avoided Tons
Big Stone	2,094,916	65,346
Coyote Station	3,209,506	4,482

D. Minnesota Power

Minnesota Power filed its 2023 Annual Report on March 1, 2024.

Boswell Energy Center (BEC) Unit 3 operated in economic commitment dispatch status for the majority of the year. Due to high market prices, BEC 3 was consistently dispatched by MISO. Due to constraints first identified in 2021 related to the co-ownership of BEC 4 with WPPI Energy, and the need for auxiliary heat in the winter, BEC 4 continued to operate on a must-run basis in 2023. Additionally, MP cited that operational criteria favor multi-day dispatch of BEC 4, a status unavailable in MISO. Though single-day economics might not favor dispatch, multi-day analysis often caused dispatch to be economic, based on the high start-up costs and long lead times for startup for these units. MP continued to engage with MISO, using its multi-day operating margin reports. MP noted that BEC 3 dispatched consistently despite being on economic dispatch from July 2021 through 2023.

Boswell also provided transmission reliability to Northern Minnesota in 2023. Without BEC, Northern Minnesota would be without significant local baseload power production and dependent entirely on transmission from other regions. MP continued to analyze the significance of this to regional stability, and identified several situations in which voltage stability could be compromised by Boswell being offline. These issues have historically been avoided when both Boswell units have been offline for maintenance, but only through careful timing and management with MISO. MP and MISO are both monitoring and responding in real-time to this issue.

MP is moving forward with its STATCOM project to address this issue, with an online date expected in 2027. Additionally, new transmission capacity, including the Northland Reliability

[9] Otter Tail 2023 Petition, at 12, 17.

Project, with an expected online date of 2030, will assist in mitigating this issue.

MP also noted that both BEC 3 and BEC 4 may occasionally need to be run for three-to-five day periods on a must-run status to maintain proper margin-to-emissions levels. MP estimated that, when dispatching economically, every third to fifth start-up would be needed to run on this basis. MP also stated that the units, designed for consistent use, may have component wear and reliability issues if cycled often. Boiler chemistry maintenance may also increase in an economic dispatch model, if cycling is frequent.

MP stated that economic dispatch would not be expected to affect Boswell staffing levels. However, MP did note that coal costs could increase if MP cannot provide a reliable delivery schedule to coal producers. Rail costs could also increase due to MP's captive shipper status to the BNSF railroad. The current rail contract, which ensures prudent costs, requires consistent deliveries for best prices.

No new plant ratings changes have been implemented since BEC 3 reduced operational minimums from 175 MW to 75 MW in November 2021, and BEC 4 reduced its operational minimums from 300 MW to 210 MW in 2018, with a further reduction of its emergency minimum from 210 MW to 185 MW in December 2021.

MP continued to expect BEC3 to cease coal operations in 2030, and BEC 4 by 2035.

1. Carbon Dioxide Emissions

MP evaluated the CO2 emissions at Boswell. Because Boswell 4 runs consistently on a must-run basis, the avoided emissions are zero. Boswell 3 Emissions and avoided emissions are listed in Table 5 below.

Table 5 – Minnesota Power Carbon Dioxide Emissions[10]

Unit	Actual Tons	Avoided Tons
Boswell 3	2,464,473	27,632[11]
Boswell 4	2,574,516	0

E. Department of Commerce – Comments

The Department of Commerce evaluated the 2023 utility filings. The Department noted that ongoing MISO market changes would potentially impact this proceeding, citing specific changes to the supply-side capacity market and to the Value of Lost Load, which are expected to be updated in 2024.

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[10] MP Petition, at 9-10.

[11] MP attributed approximately 20,000 in avoided CO2 to the unit being decommitted to MISO in February due to lower LMPs, and approximately 7,000 in avoided CO2 to outages. Boswell 4 was in Must-Run status, and so had no avoided CO2.

Across all utilities, the Department found that coal plants ran on an economic basis 23.1% of the time, Must Run 52.2% of the time, with outages adding to 24.7% of the time in 2023. Since the initiation of this project in 2019, Must-Run status times have dropped from 72.6% to 52.2%, with most of the decreases occurring in 2020 and 2021. From 2021 to 2023, the Must-Run rate remained fairly constant, ranging from 51.5% to 54.4%.

In 2023, the Department identified approximately 21.9% of day-ahead dispatch occurred at uneconomic minimum levels, with another 10.0% classified as uneconomic above minimum, for a total of 31.9% of dispatch deemed uneconomic. This is up from 16.4% in 2022, and driven greatly by decreases in both on and off-peak Locational Marginal Prices (LMPs), from an average of $44.10 in 2022 to $28.75 in 2023.

Table 6 illustrates MP's Net Benefit hours by plant.

Table 6 – Hours at Net Benefit by Plant[12]

Unit	Net Benefit	Breakeven	Net Cost
Boswell 3	5,707 (65%)	948 (11%)	2,105 (24%)
Boswell 4	3,858 (44%)	2,161 (25%)	2,741 (31%)
Big Stone	2,191 (25%)	2,015 (23%)	4,554 (52%)
Coyote	5,767 (66%)	794 (9%)	2,199 (25%)
King	1,281 (15%	6,432 (73%)	1,047 (12%)
Sherco 1	3,907 (45%)	2,439 (28%)	2,414 (28%)
Sherco 2	1,494 (17%)	5,938 (68%)	1,328 (15%)
Sherco 3	2,897 (33%)	3,971 (45%)	1,892 (22%)

The above generally reflects an increase in hours operated at Net Cost of 2021, again reflecting lower LMP's in Minnesota.

In the Department's view, over the last several years, changes to LMP's are the driver for reduced uneconomic dispatch, rather than changes to utility practices.

The Department also analyzed the avoided emissions (See Tables 2, 4-5 in the utilities' sections). The Department found insufficient data to draw firm conclusions regarding the impact of economic dispatch on emissions, but that the potential to decrease emissions exists. The Department noted a significant increase in avoided emissions at the Xcel plants relative to 2022.

Table 7 illustrates the carbon dioxide emissions and avoided emissions for all of Xcel, MP and Otter Tail's units in 2022-2023.

[12] DOC 2024 Comments, at 9-10, 12.

Table 7 – Carbon Dioxide Avoided Emissions[13]

Unit	CO2 Emissions (2022)	CO2 Emissions Avoided (2022)	CO2 Emissions (2023)	CO2 Emissions Avoided (2023)
Boswell Unit 3	2,604,917	2,087	2,464,473	27,632
Boswell Unit 4	2,618,437	-	2,574,516	-
Big Stone	2,390,422	24,033	2,094,916	65,346
Coyote	2,787,970	-	3,209,506	4,482
King	1,385,510	476,869	1,094,107	1,728,499
Sherco Unit 2	3,955,004	66,640	3,205,467	463,488
Sherco Unit 1	3,416,090	69,911	1,390,671	405,743
Sherco Unit 3	2,423,237	119,360	1,925,692	107,850
Total	**21,581,587**	**758,900**	**17,959,348**	**2,803,040**

The Department evaluated the best-case and worst-case scenario modeling as having little value, identifying several units where actual results were outside the best-case and worst-case scenarios, and some units where worst-case savings are more than best-case savings.

The Department found that curtailment at MP and Xcel were in line with prior years, while Otter Tail's curtailment dropped significantly from 2022.

The Department recommended the Commission accept Xcel, Minnesota Power, and Otter Tail's March 1, 2024 filings as adequate and meeting the filing requirements.

III. 2024 UTILITY FILINGS

F. Xcel Energy

On March 3, 2025, Xcel Energy filed its annual report.

1. Self-Commitment and Self-Scheduling

Xcel analyzed the economic impact of its self-commit actions by comparing the MISO day-ahead and real time revenues and charges received from its self-commit approach for certain resources to production costs to determine margin.

In Fall 2020, Xcel began to suspend normal operations at King and Sherco 2 during non-peak seasons. However, in March 2022, MISO's Independent Market Monitor (IMM) raised concerns regarding the reasonableness of the plan to idle the plants. Since then, the units have been

[13] DOC 2024 Comments, at 17-18.

offered on an economic basis during the spring and fall. The Commission's November 8, 2023 Order required Xcel to develop a plan to operate King only during the months of June – February, other than for emergency, reliability, or capacity obligations. Xcel's November 2023 compliance filing described its plan to add a social cost of carbon (SCC) to energy offers for King during non-peak seasons as a solution to manage seasonal operation.

Xcel has dispatched nuclear on an economic basis in the day-ahead market since September 2019, treating fuel costs as fixed since June 2020. During 2024, Xcel did not self-schedule (i.e. set a fixed level of output for the plant) for any hours, but there were hours of self-commitment, as shown in Table 8 below.

Table 8: 2024 DART Margin for Non-Discretionary Self-Commit of Baseload Units[14]

Net MISO Payment - Production Costs - (cost)/benefit							
King	Sherco 1	Sherco 2	Sherco 3	Prairie Island 1	Prairie Island 2	Monticello	Total
$7,697,138	$28,921,972	$0	$16,553,712	$65,864,035	$90,625,720	$151,957,718	$361,620,295

Net MISO Payment - Total Production Costs including Remaining Unit Fuel Costs - (cost)/benefit							
King	Sherco 1	Sherco 2	Sherco 3	Prairie Island 1	Prairie Island 2	Monticello	Total
$7,697,138	$28,921,972	$0	$16,553,712	$40,588,478	$59,728,874	$111,107,925	$264,598,099

In evaluating self-commitment, Xcel excluded unavoidable self-commitment, such as mandatory resource testing, offtake contract requirements, system reliability, and maintenance outages, which are noted in Attachments A & B. The analysis only considered strategic self-commitment.

Based on its analysis, Xcel believed that the lack of multi-day commitment led to less assurance that the market will commit and de-commit baseload resources with slower start-up and longer minimum down times in an optimal manner, and continued to advocate for a multi-day commitment process.

2. Avoided Carbon Dioxide Emissions

Table 9 illustrates avoided and actual CO2 emissions by unit.

Table 9: 2024 CO2 Emissions By Unit[15]

Unit	Actual Tons	Avoided Tons
King	654,948	2,205,256
Sherco 1	2,841,521	97,336
Sherco 3	2,319,249	141,625

[14] Xcel 2024 Petition, at 4.

[15] Xcel 2024 Petition, at 10.

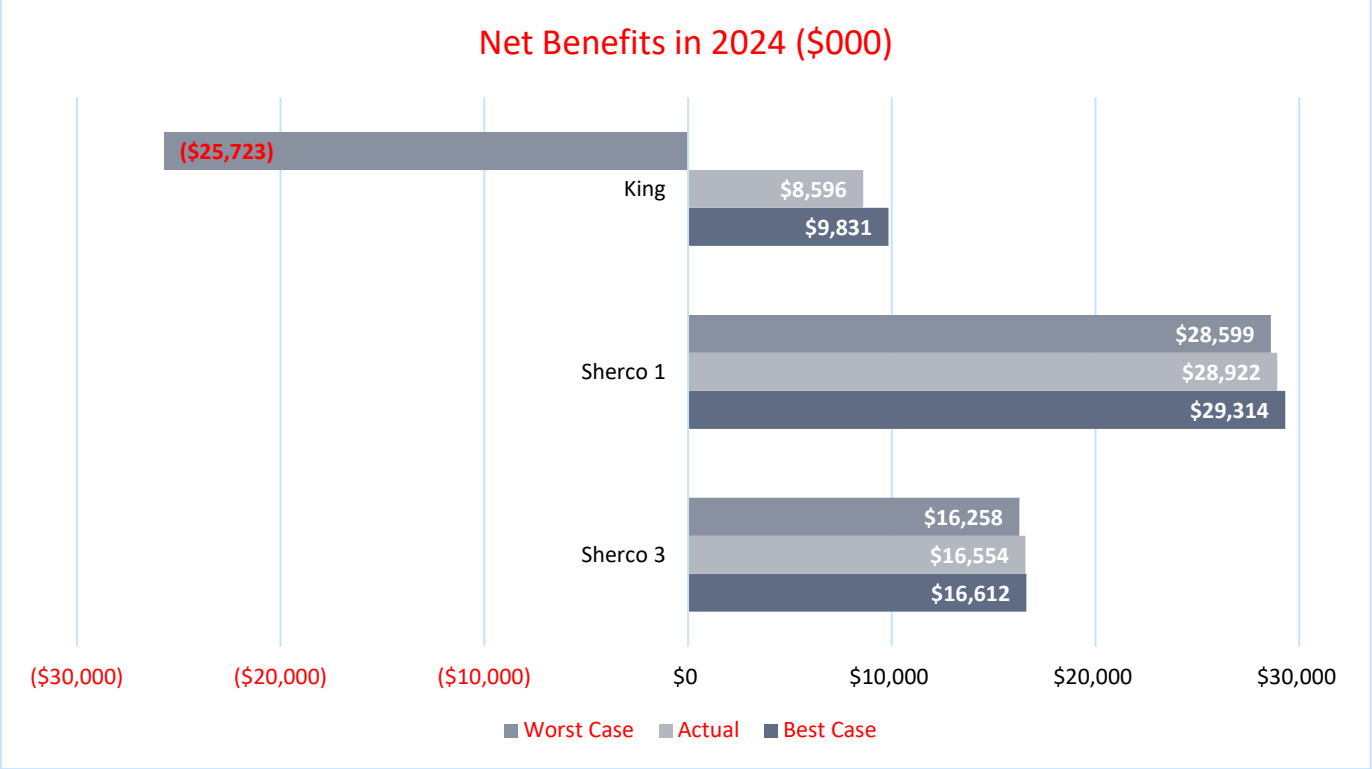
3. Minimum Operating Levels and other Plant changes

Xcel found that reducing minimum required load from 260 MW to 215 MW produced $60,532 in customer benefits in 2024. In December 2023, Sherco 2 ceased generation and entered retirement status. With the renewable energy transition, the remaining coal units created a Seasonal Dispatch Best Practices document to address maintenance, layup, and equipment management during extended shutdowns. Additionally, Xcel continued to evaluate opportunities to provide resource flexibility to MISO.

4. Best and Worst Case Analysis

Xcel agreed to use a year-round economic commitment scenario as "Best Case" and a year-round self-commitment/must run scenario as "Worst Case". Table 10 illustrates the results of these scenarios. Xcel indicated that, as coal plants continue to retire, the best-case and worst case scenario analysis is expected to yield results with decreasing value. Therefore, Xcel suggested that the reporting parameter requirement could be updated or eliminated.

Table 10: Unit Day Ahead Margins in Best, Worst And Actual Cases[16]



In Reply Comments, Xcel supported the Department's recommendation to discontinue the best/worst case reporting requirement.

[16] Xcel 2024 Petition, at 8.

5. Economic & Seasonal Dispatch at Sherco 1 & 3

Xcel and Southern Minnesota Municipal Power Agency (SMMPA) operate Sherco 3 under a joint operating agreement, thus Sherco 3 is not being offered on an economic basis. Under the agreement, each partner is its own Market Participant in managing their pro-rata offer of the plant to MISO.

Regarding Sherco 1's auxiliary boiler projects, Xcel indicated of meeting all milestones in the December 1 Order and does not plan to report on it going forward, unless there is a change to the feasibility and economic commitment.

6. Seasonal Dispatch Plans for King and Sherco 1

In 2024, King remained offline for the entire seasonal period in both actual operations and the economic case. Sherco 1 had limited opportunity in 2024 to operate under the seasonal operational plan, but mostly remained in outage, post-outage testing, or must run for steam obligations and water inventory control.

In November 2023, Xcel filed a seasonal operational plan for the King plant, which included a social cost of carbon (SCC) for energy offers during the months of March – May and September – November. The Commission approved the plan in January 2024.[17]

Sherco 1 did not idle in 2024 due to clearing the 2024/2025 (June 1/May 1) MISO PRA, with the unit scheduled to retire on December 31, 2026. King did not clear the 2024/2025 (June 1/May 1) MISO PRA, as it was idled during the fall.

In Reply Comments, Xcel confirmed that, during 2024, there were no instances when greater economic commitment led to lost revenue for Sherco or King, nor did MISO economically start them. Therefore, there was no need to implement strategies weighing potential lost revenues against environmental benefits.

G. Otter Tail Power Co.

On February 27, 2025, Otter Tail filed its annual report.

1. Self-Commitment Requirements

Otter Tail noted that both Big Stone and Coyote were part of its accredited capacity, and so it cannot offer either on a seasonal basis.

Coyote Station is co-owned by Otter Tail, Minnkota Power Cooperative, Montana Dakota Utilities, and Northwestern Energy, and operates in both MISO and SPP. Since May 2021, it has

[17] Docket E-999/CI-19-704*, In the Matter of an Investigation into Self-Commitment and Self-Scheduling of Large Baseload Generation Facilities*, Notice of Approval of Compliance Filing, January 12, 2024.

been economically decommitted. However, since much of its coal costs are considered fixed for the purposes of dispatch, there are relatively few hours throughout the year where it did not make economic sense to operate the plant.

Big Stone is co-owned by Otter Tail, Montana Dakota, and Northwestern, and similarly operates in both SPP and MISO. Big Stone may be economically dispatched when all owners agree. As all fuel costs are considered variable, it is more frequent that market prices are below variable operating costs.

Otter Tail also noted the MISO single-day commitment and dispatch process which may artificially inflate costs of operating the plant.

2. Otter Tail Specific Reporting

Otter Tail evaluated its mine-mouth coal contract at Coyote Station but found that there is little scope for modification to address fluctuating market conditions. Otter Tail noted that changes would require agreement with the mine-owner/operators and plant co-owners, plus potentially the mine-owner's lenders.

3. Carbon Emissions

Table 11 illustrates Otter Tail's avoided and actual CO2 emissions.

Table 11 – Otter Tail Carbon Dioxide Emissions[18]

Unit	Actual Tons	Avoided Tons
Big Stone	2,210,266	90,400
Coyote Station	2,942,752	4,012

H. Minnesota Power

On March 3, 2025, Minnesota Power filed its 2024 annual report on self-commitment and self-scheduling.

In response to Department comments, MP filed supplemental information on August 21, 2025.

Minnesota Power noted that declining gas prices throughout 2023 and early 2024 led to reduced energy production from both Boswell 3 and Boswell 4 in 2024.

Minnesota Power continued to evaluate Boswell 4 for economic dispatch but still does recommend it for 2025. MP continued to cite the following factors in making economic dispatch at Boswell 4 difficult:

[18] Otter Tail 2024 Petition, at 12, 18.

- Joint ownership with WPPI, and the difficulties of dispatching the station to MISO without risk of MP's 'portion' being scheduled to run and the WPPI 'portion' not being scheduled, or vice-versa.
- Auxiliary heat needs in winter – natural gas boilers will be available by the end of 2024-2025 heating season.
- Market readiness – specifically the ability to dispatch across multiple days, which does not exist in MISO, due to Boswell's long lead times.
- Transmission reliability
- Emissions compliance
- Maintenance costs
- Fuel Procurement costs

MP made no changes to its 2024 operational minimums and continued to expect Boswell 3 to cease operations by 2030, and Boswell 4 by 2035.

1. Carbon Emissions

Table 12 illustrates Minnesota Power's carbon emissions analysis for 2024. Due to the Must-Run status of Boswell Unit 4, there are no avoided emissions at Boswell 4.

Table 12 Minnesota Power Carbon Emissions - 2024[19]

Unit	Emissions	Avoided
Boswell Unit 3	1,617,259	33,972
Boswell Unit 4	2,688,734	-

I. 2024 Department Comments

The Department filed comments on April 30, 2025, recommending approval of the utilities' reports. The Department identified two deficiencies, asking Xcel to identify where in its report it provided information showing how increased economic commitment led to lost revenues. Xcel's May 30th comments noted that no such events existed in 2024.

Additionally, the Department requested that Minnesota Power provide information on plant startup conditions, which was provided on August 21, 2025.

1. Net Benefit/Net Cost Analysis

The Department found that, across all plants, Economic dispatch resulted in slightly less usage in 2024 than 2023. The Department calculated that 19.8% of hours were "Economically" dispatched, 62.7% were Must-Run, and 17.4% were in outage. The Must Run hours rose significantly, from 52.2% in 2023 to 62.7% in 2024, resulting in both fewer Economic dispatch

[19] Minnesota Power 2024 Self Commitment Report, p. 10.

hours and fewer outage hours.

The Department evaluated the hours of operation with net benefits, breakeven, and net costs, as illustrated in Table 13 below.

Table 13 – Hours at Net Benefit by Plant (2024)[20]

Unit	Net Benefit	Breakeven	Net Cost
Boswell 3	3,730 (42%)	2,812 (32%)	2,242 (26%)
Boswell 4	4,093 (47%)	472 (5%)	4,219 (48%)
Big Stone	2,041 (23%)	1,239 (14%)	5,504 (63%)
Coyote	4,078 (46%)	1,034 (12%)	3,672 (42%)
King	953 (11%)	7,350 (84%)	481 (5%)
Sherco 1	3,949 (45%)	2,812 (32%)	2,023 (23%)
Sherco 2[21]	-	-	-
Sherco 3	3,551 (40%)	1,810 (21%)	3,423 (39%)

The Department's analysis found that hours at net cost were up from 2023, with the exception of King and Sherco 1, where net cost hours were up. This is consistent with Locational Marginal Prices (LMPs) trending downward – dropping from $44.10 in 2022, to $28.75 in 2023, and $27.40 in 2024.

2. Carbon Emissions

The Department evaluation of carbon dioxide emissions in 2024 found that flexible dispatch is resulting in decreased emissions. Avoided emissions grew from 3.5% of actual emissions in 2022, to 15.6% in 2023 and 16.8% in 2024.

Table 14 illustrates the carbon dioxide emissions and avoided emissions for all of Xcel, MP and Otter Tail's units in 2023-2024.

[20] DOC 2024 Comments, at 9-11.

[21] Sherco 2 was retired on December 31, 2023.

Table 14 – Carbon Dioxide Avoided Emissions (2023-2024)[22]

Unit	CO2 Emissions (2023)	CO2 Emissions Avoided (2023)	CO2 Emissions (2024)	CO2 Emissions Avoided (2024)
Boswell Unit 3	2,464,473	27,632	1,617,259	33,972
Boswell Unit 4	2,574,516	-	2,688,734	-
Big Stone	2,094,916	65,346	2,210,266	90,400
Coyote	3,209,506	4,482	2,942,752	4,012
King	1,094,107	1,728,499	654,948	2,205,256
Sherco Unit 2	3,205,467	463,488	-	-
Sherco Unit 1	1,390,671	405,743	2,841,521	97,336
Sherco Unit 3	1,925,692	107,850	2,319,249	141,625
Total	**17,959,348**	**2,803,040**	**15,274,729**	**2,572,601**

3. Best Case-Worst Case Reporting

The Department continued to recommend that Best-Case/Worst-Case reporting be discontinued, due to the illogical and contradictory results produced.

4. Summary of Reporting

The Department drew the following conclusions from the 2024 reports:

- The percent of uneconomic DA (day ahead) dispatch has increased substantially the last two years and the percent uneconomic DA dispatch above minimum has reached a new high in 2024.
- MP's Boswell units and Otter Tail plants have operated at a higher percentage of hours at net cost in 2024 than in the prior 3 years.
- The equivalent data for Xcel's units shows some at a high level (Sherco 3) and others relatively low (King) for 2024.
- There is no clear trend in the utilities' EFOR data for 2024.
- Avoided carbon dioxide emissions for 2024 are substantial.
- The utilities experienced high levels of curtailment in 2024.

The Department recommended that Best-Case/Worst Case reporting be discontinued, and all three utilities reports be accepted by the Commission as complete.

IV. STAFF ANALYSIS

[22] DOC Comments, at 16-17.

In its comments, the Department recommended that Xcel show in its 2024 report where greater economic commitment led to lost revenue or provide the information. Xcel provided further information in reply comments, but Staff notes the Department did not provide a response. Therefore, at the agenda meeting, the Commission may want to ask the Department if Xcel's additional information for 2024 is acceptable prior to a determination of adequacy and meeting the filing requirements.

Additionally, Xcel and Otter Tail filed amendments to their 2023 annual report on various dates. While the Department recommended the Commission accept the March 1, 2024 filings, there were no recommendations in regard to the amendments. Therefore, at the agenda meeting, the Commission may want to ask the Department if Xcel and Otter Tail's amendments are adequate and met the filing requirements.

Finally, Staff notes that the Department identified a deficiency in Minnesota Power's 2024 filing, despite recommending approval. On page 3 of the Department's April 30, 2025 Comments, the Department stated:

> First, the Commission's December 1, 2021 Order required the utilities to include "Plant startup conditions (e.g. cold, warm or hot). While MP included certain information, the Department recommends MP include a column in the annual Excel spreadsheet that indicates whether each start was cold, warm, or hot. Both Xcel and OTP met this Order requirement in their respective compliance filings.

This paragraph is unclear as to whether the intent was that MP file this additional data for 2024 or in future reports, nor did the Department include in its final list of recommendations. Minnesota Power indicated in Reply Comments a willingness to file this additional information for the2024 report, and did so on August 21, 2025.

Staff concurs with the Department and Xcel Energy that the Best-case/Worst-case reporting should be discontinued due to the contradictory and illogical results that it has provided in several years of reports.

DECISION OPTIONS

2023 Compliance

1. Find that Xcel Energy's March 1, 2024 filing in this docket is adequate and met the filing requirements. [Xcel Energy, Department]

2. Find that Xcel Energy's March 29, 2024 and April 4, 2024 amendments in this docket are adequate and met the filing requirements. [Xcel Energy]

3. Find that Otter Tail's March 1, 2024 filing in this docket is adequate and met the filing requirements. [Otter Tail, Department]

4. Find that Otter Tail's April 3, 2024 amendment in this docket is adequate and met the filing requirements. [Otter Tail]

5. Find that Minnesota Power's March 1, 2024 filing in this docket is adequate and met the filing requirements. [MP, Department]

2024 Compliance

6. Find that Xcel Energy's March 3, 2025 filing in this docket is adequate and met the filing requirements. [Xcel Energy]

7. Find that Otter Tail's February 27, 2025 filing in this docket is adequate and met the filing requirements. [Otter Tail, Department]

8. Find that Minnesota Power's March 3, 2025 filing as amended on August 21, 2025 in this docket is adequate and met the filing requirements. [MP, Department]

Reporting Change

9. Discontinue the Best Case/Worst Case reporting requirement. [Xcel Energy, MP, Department]