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Minnesota Public Utilities Commission
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**RE: In the Matter of an Investigation into Self-Commitment and Self-Scheduling of Large Baseload Generation Facilities
Docket No. E999/CI-19-704
Annual Compliance Filing**

Dear Mr. Seuffert:

Otter Tail Power Company (Otter Tail Power) submits this annual compliance filing in the above referenced docket in response to the Minnesota Public Utilities Commission's (Commission) November 13, 2019 Order in Docket No. E-999/AA-18-373 (AAA Order), which was revised and summarized in Attachment A of the January 11, 2021 Order in Docket No. E-999/CI-19-704. Additional requirements that were listed in the Commission's Orders for Docket No. E-999/CI-19-704 dated December 1, 2021, and November 17, 2022, are also included in this filing.

Not Public Attachments 2 and 3 to this filing contain the hourly required information in Excel file format. *Due to the vast size of these files, paper copies are not provided.*

1. OVERVIEW OF ANALYSIS

Otter Tail Power conducted an analysis of its co-owned baseload coal units, Big Stone Plant (Big Stone) and Coyote Station (Coyote).[1] This analysis seeks to provide a reasonable quantification of the difference in the cost of running the plant versus the corresponding prevailing market energy revenues, including times of self-commitment.

For purposes of clarity, Otter Tail Power provides the following definitions of the terms Self-Commitment and Self-Schedule dispatch:

[1] Big Stone Plant is a 474 MW plant, of which Otter Tail is a 53.9 percent owner. Coyote Station is a 427 MW plant, of which Otter Tail is a 35 percent owner.

Definitions:

Self-Commitment dispatch: During a self-commitment, the utility requests the Midcontinent Independent System Operator (MISO) to commit the unit. The unit is committed to at least the unit's economic minimum output. MISO will commit the unit independent of market pricing assuming such a commitment does not result in a reliability concern. The unit is paid the prevailing Locational Marginal Price (LMP) market price for that unit and is not assured to be made whole to its costs. During self-commitment, MISO may dispatch the unit above minimums if market pricing is supportive of such dispatch.

Self-Schedule dispatch: Market Participants may submit self-schedules consisting of fixed quantities of energy, per hour, that may be dispatched from an online unit. If the self-schedule is less than the unit's economic maximum, the unit may be dispatched above the self-schedule on an economic basis. A self-schedule is a price taker up to the self-scheduled amount. Any cleared amount above the self-schedule is eligible to set price. A self-schedule is not a guaranteed dispatch unless the unit is designated as must-run or as a self-commitment. Otter Tail Power utilizes a self-schedule when units are undergoing testing and require specific generation output levels. It also uses a self-schedule when self-committing resources to ensure the economic minimum is dispatched.

2. REASONS TO SELF-COMMIT OR SELF-SCHEDULE:

Capacity Accreditation Requirements

Seasonal dispatch is not currently viable for Otter Tail Power generating units. In order to meet MISO Module E seasonal capacity requirements, Otter Tail Power utilizes, and accredits, its large baseload generation facilities for all four seasons[2] in a given planning year. Every generator that is a MISO accredited capacity resource and clears the Planning Resource Auction maintains a daily must offer requirement. This offer can be either a self-commit offer or an economic offer. This must offer requirement does not allow Otter Tail Power to de-commit, meaning make the unit unavailable to MISO for commitment and dispatch, on a seasonal basis, or otherwise, except for when the unit is on mechanical outage, overhaul, testing, etc. In the event Otter Tail Power were to forego capacity accreditation of the Big Stone or Coyote generators for a season, Otter Tail Power would potentially need to procure additional capacity resources to meet the MISO Module E capacity requirements for that season. Additional methods of procuring capacity would include construction of new generation facilities, bi-lateral capacity purchases from other capacity holders, or the purchase of capacity through the annual MISO capacity auction.

[2] On August 31, 2022, FERC approved MISO Tariff revisions that include the adoption of a seasonal resource adequacy construct and capacity requirements. These changes allowed MISO to move forward with seasonal capacity auctions with each season having its own capacity requirement based on seasonal coincident peak loads and a seasonal reserve margin. Along with seasonal capacity requirements, MISO will also accredit resources on a seasonal basis. Similar to the annual auction, resources will have a must offer requirement for any season that they clear. (180 FERC ¶ 61,141 Order Accepting Proposed Tariff Revisions Subject to Condition, August 31, 2022. FERC Docket Nos. ER22-495-000, ER22-495-001).

Otter Tail Power utilizes a full economic commitment offer for all company generating units except for Coyote and Big Stone. The current offer practices of Coyote and Big Stone are detailed below.

Coyote Station Joint Ownership
Prior to May 2021, Coyote was exclusively offered as a "must-run" unit, meaning Otter Tail Power and the other co-owners scheduled their shares of the unit as self-committed at minimum output. MISO could choose to dispatch the unit higher if market and/or reliability conditions merited additional output.

At the end of April 2021, Coyote co-owners implemented coordinated offer processes that allowed for joint economic offer capability. On May 1, 2021, Coyote was economically decommitted for the first time. Coyote is co-owned by Otter Tail Power (35 percent), Minnkota Power Cooperative (30 percent), Montana Dakota Utilities (25 percent), and Northwestern Energy (10 percent). Otter Tail Power, Minnkota Power Cooperative,[3] and Montana Dakota Utilities operate within the MISO market, while Northwestern Energy operates within the Southwest Power Pool (SPP) market. The SPP and MISO markets do not coordinate the commitment nor the dispatch of jointly owned units. Both markets model the shares of a jointly owned unit as individual, separate, and distinct generators. As a result, partial commitment and dispatch of the unit, based on different co-owner shares and offers, can be a regular occurrence. Partial commitment and dispatch can result in under-recovery of startup and make whole payments to the partners whose shares are not committed or dispatched. From a practical standpoint, since the plant is one physical generator, commitment of a single owner's share of the plant will result in the commitment of all owners' shares of the plant. Per the co-owner contract, utilization of an economic offer requires unanimous agreement amongst the four co-owners. If any co-owner requests self-commitment, all other co-owners are required to self-commit their shares of the plant. Similarly, if MISO or SPP calls for a co-owner's portion of the plant, all other co-owners are obligated to self-commit their share, at least to minimum output. For 2024, Coyote coal costs were approximately **[PROTECTED DATA BEGINS… …PROTECTED DATA ENDS]** percent fixed costs and **[PROTECTED DATA BEGINS… …PROTECTED DATA ENDS]** percent variable costs. Historically, as a result of the fixed costs, there have been relatively few hours throughout a typical year where it did not make economic sense to operate the plant.

Big Stone Plant Joint Ownership
At the end of April 2020, Big Stone co-owners implemented coordinated offer processes that allowed for joint economic offer capability (i.e., the plant can be offered into both MISO and SPP markets for economic dispatch). Big Stone is co-owned by Otter Tail Power (53.9 percent), Montana Dakota Utilities (22.7 percent), and Northwestern Energy (23.4 percent). Big Stone maintains similar market operating complexities as Coyote. Big Stone straddles both the MISO and SPP wholesale energy markets and can be committed and dispatched by either ISO. Big Stone contractual obligations require partners to take their minimum share of the plant whenever another owner calls for commitment. Big Stone differs from Coyote in that its coal contract is structured utilizing nearly 100 percent variable costs, which results in a higher percentage of hours where MISO/SPP LMP market pricing is lower than Big Stone variable operating costs. Per the co-owner contract, offering the unit for economic dispatch

[3] Northern Municipal Power Agency owns a 30 percent share of the plant. Minnkota serves as operating agent for NMPA.

requires unanimous agreement amongst the three co-owners. If any co-owner requests self-commitment, all other co-owners are required to self-commit their share of the plant. Similarly, if MISO or SPP calls for a co-owner's portion of the plant, all other co-owners are obligated to self-commit their share, at least to minimum output.

Single Day Commitment by MISO

It should be noted that MISO utilizes a single day commitment and dispatch process. This means that market conditions for a given day, and that day only, would need to justify the economic commitment and dispatch of a unit. This often includes a large startup cost for baseload plants and may artificially increase cycling of the unit. The single day commitment and dispatch process does not consider the economics of running a baseload plant across multiple days. MISO has explored the possibility of a multi-day commitment process but does not currently have plans for development or implementation in the foreseeable future.

3. ANALYSIS APPROACH

The following reporting items in sections A-C were set forth in Attachment A of the Commission's January 11, 2021 Order. The Order, dated December 1, 2021, incorporated items D-H,[4] and the Order dated November 17, 2022, incorporated sections I-L.[4]

A. *In the investigation docket, Minnesota Power, Otter Tail, and Xcel shall provide stakeholders with the underlying data (work papers) used to complete their analyses, in a live Excel spread sheet, including, at 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)*
    i. *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.)*
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 ($/MWh)*
    i. *If a utility excludes any fuel costs from its MISO offer curves, the utility should also provide an analysis that includes all fuel costs, including those currently treated as fixed costs due to contractual terms.*
k) *Variable operations and maintenance costs ($/MWh)*
    i. *Utilities should provide Unit Fuel Costs and Unit Variable Cost as separate line items.*

[4] Docket No. E-999/CI-19-704.

ii. Utilities should include all preventative maintenance in O&M costs for reporting purposes.
iii. Future analyses of self-commitment and self-scheduling should include all production costs including fuel, variable operations and maintenance, and other variable costs associated with the plant.

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
i. Include ancillary services revenues and any other make-whole payments as a separate column in all reporting on revenue from generation.
*s) Production costs ((J+K) * O)*
t) Net cost or benefit (R-S)

<u>Monthly or annual data for all units</u>:
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
z) 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).

Otter Tail Power Response

In addition to the above points a through z, Otter Tail Power incorporated additional columns to the Big Stone and Coyote hourly data spreadsheet templates, allowing for further analysis and insight into these units. As noted above, Otter Tail Power is one of multiple co-owners, and these units participate in both the MISO and SPP markets. As a result, there are numerous hours when Otter Tail Power is obligated to self-commit its share of these plants outside of Otter Tail Power's control. The additional columns, provided in AG-AL of Attachments 2 and 3, allow for analysis of hours when Otter Tail Power specifically endorsed self-commitment, excluding periods where the units must operate at least at minimum for building heat and plant testing, for both Big Stone and Coyote. These columns summarize MISO energy

revenues, Ancillary Services Market (ASM) revenues, make whole payment revenues, variable production costs, and net benefits for Otter Tail Power endorsed hours of self-commitment (excluding required periods of building heat and plant testing). *For this 2024 filing, for both Big Stone and Coyote, these values are zero as there were no hours in 2024 where Otter Tail Power endorsed self-commitment outside of required commitments for building heat and plant testing*.

Furthermore, Otter Tail Power has included hourly day-ahead and real-time SPP LMP for both Big Stone and Coyote. This data is located in columns AN and AO of Attachments 2 and 3.

Filing Attachments:
Attachment 1 to this filing provides a summary of the monthly revenues and costs for Big Stone and Coyote for the current period.

Attachment 2 to this filing provides the requested hourly data for Big Stone for the current reporting period and an analysis of the minimum decommit time and startup costs. It also provides the data and calculations for the estimated "best-case and worst-case potential for economic commitment" for Big Stone.

Attachment 3 to this filing provides the requested hourly data for Coyote for the current reporting period and an analysis of the minimum decommit time and startup costs. It also provides the data and calculations for the estimated "best-case and worst-case potential for economic commitment" for Coyote.

Attachment 4 to this filing provides the fixed monthly O&M costs for Big Stone and Coyote, per Attachment A of the Commission's January 11, 2021 Order, part v.

Attachment 5 to this filing provides plant heat rate information as available from Big Stone and Coyote per Attachment A of the Commission's January 11, 2021 Order, parts x and y.

Attachment 6 to this filing provides a summary of the minimum decommit time analysis for each plant per Attachment A of the Commission's January 11, 2021 Order, part z.

Attachment 7 to this filing provides monthly energy MWh produced and curtailed from utility owned and contracted wind facilities.

Analysis Approach:
The following outlines Otter Tail Power's analysis approach and assumptions included in the requested analysis, as well as other factors not included or considered:

1. This analysis compares the 2024 market energy revenues received versus both the variable costs included in determining the plant's MISO offer curve and the variable costs included in determining the plant's MISO offer curve plus fixed fuel costs. The market energy revenues are derived by the hourly Day Ahead (DA) and Real Time (RT) LMP per MWh of production.

2. Revenues associated with participation in the ASM are included in this analysis.

3. Revenues associated with unit make whole payments are included in this analysis.

4. The costs of reagents are included in this analysis as they are included as part of Otter Tail Power's offer curve submitted to MISO. Otter Tail Power began recovering reagent costs through its the FCA beginning July 1, 2022. Reagent costs were recovered in base rates prior to that date.

5. One factor that is not quantifiable is the potential impact on both market prices and the related commitment and dispatch of any other Otter Tail Power generating units when either Big Stone or Coyote switch between self-commitment and economic commitment offer status.

6. The large coal units require different time durations for hot, warm, and cold starts. Also, from an "on" condition, the unit must cool for different durations in order to qualify for a hot, warm, and cold start. The combined duration of cool down time and start up notification time for the coal plant starts are as follows:

Table 1
Startup Times by Plant

Startup Conditions	Big Stone	Coyote
	[PROTECTED DATA BEGINS …	
Cold Start (including cool down time)		
Warm Start (including cool down time)		
Hot Start		
		… PROTECTED DATA ENDS]

7. Otter Tail Power includes variable preventative maintenance costs in the Unit Variable O&M cost category and in Attachments 2 and 3.

8. On January 24, 2022, Otter Tail Power, Minnesota Power, and Xcel Energy met to discuss the Commission requirement that utilities "work together to develop a consistent method for estimating the best-case and worst-case potential for economic commitment for each plant." The utilities have commonly defined a "best-case" scenario to be 100 percent economic commitment (i.e., offered for economic dispatch) and a "worst-case" to be 100 percent self-commitment. Otter Tail Power chose to utilize the existing and reported data set for this analysis (included in Attachment 2 and Attachment 3). The Otter Tail Power analysis is discussed in Section 4 of this filing.

B. *Minnesota Power, Otter Tail, and Xcel Energy shall evaluate whether reducing minimum operating levels would benefit customers and to include that evaluation and discussion in the March 1, 2021 compliance report.*

Otter Tail Power Response
In March of 2016, Big Stone reduced its total plant economic minimums from **[PROTECTED DATA BEGINS…**

…PROTECTED DATA ENDS]. In December of 2021 and January of 2022, Big Stone conducted further testing to determine whether additional reductions to the economic minimum output could be achieved. It was determined the total plant economic minimum could be reduced from **[PROTECTED DATA BEGINS…**

…PROTECTED DATA ENDS]. This reduction was implemented on April 1, 2022. Except for testing and plant derates, and the air-quality control system (AQCS) scrubber train transition issue described below, when self-committed, the Otter Tail Power share of Big Stone is self-scheduled at the economic minimum.

In 2015, Big Stone completed construction and began operation of a new AQCS system that reduced nitrogen oxides and sulfur dioxide emissions by approximately 90 percent and mercury emissions by approximately 80 percent. The AQCS system requires operation of two scrubber trains when operating at high output levels and one scrubber train when operating at low output levels. The initial physical minimum limitation under two scrubber trains was **[PROTECTED DATA BEGINS…**
…PROTECTED DATA ENDS]. The current physical minimum limitation under one scrubber train is **[PROTECTED DATA BEGINS…**
…PROTECTED DATA ENDS], which is the value listed in Columns L and M of Attachment 2 to this filing. Transitioning between one and two scrubber trains requires physical plant reconfigurations that can be labor intensive, cause additional wear and tear to the AQCS system, and require a minimum of 20 minutes to complete.

The decision to transition between one and two train operation is driven by MISO market pricing. Transitions between scrubber trains comes with additional costs, complexity in timing, communication, and market pricing issues associated with updating physical plant operating limits. When market prices are high, Big Stone will move up to full output, requiring utilization of both scrubber trains and the two-train economic minimum limit. Ideally, due to physical conditions and mechanical costs associated with transitions between one and two scrubber trains, Big Stone would remain at two trains for a minimum of six hours. However, if market pricing is considerably negative, Big Stone will initiate a return to one train operation and the utilization of the one train economic minimum limit. The lower the prevailing LMP market, the quicker the plant will return to one train operations and a lower economic minimum. The process, economics, and timelines to transition from two scrubber trains to one scrubber train has been reviewed by the MISO IMM, who has determined the Big Stone train transition process to be reasonable.

Minimum load at Coyote changed from **[PROTECTED DATA BEGINS…**

…PROTECTED DATA ENDS] The reason for the varying minimum load level under colder ambient conditions is the temperature into the scrubber will be reduced and a higher temperature is needed to evaporate the slurry introduced to control sulfur emissions. Therefore, at lower loads and cold ambient temperatures, the plant would risk being out of compliance with regards to sulfur emissions with limited ability to increase scrubbing to control.

C. *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.*

Otter Tail Power Response

Big Stone (April 2020) and Coyote (April 2021) co-owners have implemented the capability to offer these units into the MISO and SPP markets utilizing an economic offer. As previously mentioned, these units straddle both the MISO and SPP wholesale energy markets and can be committed and dispatched by either ISO. Big Stone and Coyote contractual obligations require partners to take their minimum share of the plant whenever another owner, or market, calls for commitment. Per the co-owner contract, utilization of an economic offer requires unanimous agreement amongst the co-owners. If any co-owner requests self-commitment, all other co-owners are required to self-commit their share of the plant.

Similarly, if MISO or SPP calls for a co-owner's portion of the plant, all other co-owners are obligated to self-commit their share, at least to minimum output. This results in economic decommitment occurring only when all co-owners agree to offer the unit economically *and* the MISO and SPP markets do not economically commit the unit.

As of April 2020 for Big Stone and as of April 2021 for Coyote, co-owners have been meeting regularly to discuss and coordinate unit offer practices. In these meetings, co-owner marketing teams meet with Big Stone and Coyote operations staff to discuss the health of the unit, operational considerations, historical, current, and projected market conditions (in both the SPP and MISO markets), weather forecasts, and potential adjustments to the economic offer curves. Co-owners will then indicate their offer preference, and duration of, for either an economic offer or self-commitment. In the event one co-owner calls for self-commitment, all other co-owners are required to self-commit their share at minimum output.

The Big Stone and Coyote co-owner marketing teams meet regularly to discuss market conditions and offer strategy. The periodicity of the meetings is adjusted, as appropriate, during times of low market pricing (extended decommitment) or high market pricing (extended commitment). Co-owner marketing teams maintain communication between regularly scheduled meetings in the event market conditions call for updated offer parameters.

D. *Minnesota Power, Otter Tail, and Xcel Energy shall file in their March 1, 2021 filing a complete analysis of the costs and benefits of economic or seasonal dispatch relative to self-scheduling at the following facilities:*

a. Coyote Station
b. Big Stone Plant

Otter Tail Power Response
Otter Tail Power provides the updated analysis in Section 4 of the current filing.

E. *Otter Tail shall provide a discussion of the options of changing its current coal contract at Coyote Station and 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.*

Otter Tail Power Response
Coyote is a mine mouth generating facility, meaning that it was conceived, sited, designed, and constructed to have a long-term, integrated relationship with an immediately adjacent mine serving the plant. The mine is typically intended to serve just the mine-mouth plant with which it contracts, and it is therefore typically much smaller than the large mines that serve numerous delivered-fuel plants, such as the mines in the Powder River Basin that serve Big Stone. As noted in prior filings in this docket Coyote is the only mine-mouth generation facility regulated by the Commission; all other coal generation facilities regulated by the Commission are delivered-fuel plants.

One of the primary benefits of a mine-mouth plant, in contrast to a delivered-fuel plant, is that it is not dependent on the rail systems or other transportation systems, over which the coal necessary to fuel the plant must be transported. Of course, without having a secure and consistent long-term relationship with the adjacent mine, a mine-mouth plant would be exposed to fuel shortages; conversely, without a long-term relationship, the supplying mine would typically not make investments necessary to ensure the extraction of a consistent supply of coal necessary to fuel the plant. Without consistent fuel, the plant would not be reliable and would not be accreditable for capacity.

Mine/plant contracts for mine-mouth plants have very different fixed/variable components when contrasted with delivered-fuel plants. These differences are due to the nature of the relationship and what each party requires from the relationship. The mine, in the case of a mine-mouth plant, must recoup its fixed costs (the costs of investments in opening the mine, the equipment, reclamation, etc.) and its variable costs (certain costs that vary with the volumes produced) generally from a single customer with which it has a long-term relationship. The larger fixed components of these contracts when compared to delivered fuel contracts are not because the transacting parties have different desires about the way the plant should operate, etc. Similarly, the plant requires a long-term relationship with its supplier, to ensure a consistent supply of fuel at a known cost (it cannot replace that fuel from the market if the supplier were to increase its prices or become unreliable in some other way). These are economic attributes applicable to mine-mouth plants, and they are the reasons for the differences in

fuel contracts. These attributes have been the subject of significant academic study, often under the term "asset specificity," (*see, e.g.*, Paul L. Joskow, "Contract Duration and Relationship-Specific Investments: Empirical Evidence from Coal Markets", *American Economic Review*, March 1987); and several works of Nobel Laureate, O.E. Williamson.

Consistent with the foregoing explanation of contracting for mine mouth plants, Coyote obtains its fuel through an all-requirements Lignite Sales Agreement (LSA) with Coyote Creek Mining Company, L.L.C (CCMC), a subsidiary of North American Coal. Under the LSA, CCMC is responsible for developing, constructing, operating, and eventually reclaiming the mining facility, the costs of which are reflected in the terms of the LSA. Coyote's co-owners and CCMC entered into the LSA in 2012 with a term through the end of 2040.[5] The long term of the LSA reflects the unique nature of mine mouth facilities as noted above.

Given the nature of mine-mouth agreements, there are few, if any, options for changing the terms of the LSA to address fluctuating market conditions. As one of several co-owners, Otter Tail Power lacks the ability, by itself, to seek changes to the terms of the LSA. Any effort to change the terms of the contract would require the co-owners to act in concert, and even then, the co-owners together lack the ability to make changes to the LSA without the agreement of the seller. Therefore, any changes to the LSA would need to be secured through negotiations. In short, changes to the LSA would require at least two agreements: (1) an agreement among co-owners to pursue changes, to include an agreement on acceptable trade-offs and costs necessary to secure negotiated contract changes, and (2) an agreement between the co-owners and CCMC (and North American Coal) to change terms. In addition, any changes to the relationship would require approval of CCMC lenders. In sum, there are significant barriers to seeking changes to a mine-mouth supply agreement, especially in the context of joint-ownership of the generation facility.

A discussion concerning options for changing the LSA and an "evaluation of how potential costs of changing the contract compare to Coyote's past and forecast operating losses" should also address the concept of operating losses. Otter Tail Power has previously noted in this docket and in Otter Tail Power's most recent general rate case that an operating or production cost loss analysis has significant flaws.[6] While comparisons of MISO revenue and production costs is a useful measure of a generation plant's flexibility in responding to changing market conditions, it is not indicative of a generation plant's cost effectiveness. Whether a generation facility is cost effective requires a broader analysis involving market price forecasts and other forecasts, capacity expansion modelling and other considerations generally considered in IRP proceedings. There are many cost-effective plants that have limited operational flexibility that would show

[5] In Docket No. E017/D-13-795, the Commission approved extending the remaining life of Coyote Station by 8.4 years to 27.4 years, with an AYFR of 2041 to correspond with the anticipated duration of the LSA.
[6] As used in this docket operation or production losses refers to a comparison of MISO revenues received for the plant and production costs. Among other problems this analysis does not account for Coyote Station's significant capacity function. It also incorrectly assumes Otter Tail would rely on the spot market in the absence of Coyote Station, rather than securing replacement resources. See Docket No. E017/GR-20-719, Gerhardson Rebuttal at 16-21.

production losses, including most non-dispatchable renewable resources and many base load generators. This issue is addressed more fully in the "Additional Discussion" section below.

F. *The Commission carries forward all the requirements from prior orders in Docket Nos. E-999/AA-18-373 and E-999/CI-19-704 and requires inclusion of the following in future reports:*

a. Information on annual carbon dioxide emissions

The following table provides 2024 carbon dioxide emissions and plant output for Big Stone and Coyote.

Table 2
Plant CO_2 Emissions Data

Year	Big Stone (Total Plant Data)			Coyote (Total Plant Data)		
	CO_2 tons	Net MWh	CO_2 Rate, lbMWh	CO_2 tons	Net MWh	CO_2 Rate, lbMWh
2024	2,210,266.4	1,564,696	2,825	2,942,752.4	2,200,530	2,675

Although the above data was used to calculate each plant's annual average rate of CO2 emitted per MWh, the rate produced for any given hour is dependent on several variable operating conditions, such as load level and coal quality. Therefore, although a high-level estimate of avoided CO2 emissions will be made by multiplying the annual average CO2 rates by economic commitment hours, an exact number cannot be determined.

b. Reasons for unavoidable self-commit status designations

Attachments 2 and 3 contain hourly unavoidable self-commitment status designations.

The following list describes some of the reasons for unavoidable self-commitment at Coyote and Big Stone:

- Co-owner request
- Building heat requirements
- SPP market conditions
- Testing
- Maintenance and operational logistics
- Safety
- Emission requirements
- Third party obligation (i.e., steam contracts)

In the 2023 filing, Otter Tail Power added, or perhaps delineated, building heat requirements as a main reason for required self-commitment. While building heat has always been necessary for reliable operations during winter months, this reason for self-commitment had previously been included within the category of co-owner request. The understanding being that co-owners

would almost always call for self-commitment during winter operating conditions. The addition of a building heating category, and the monitoring of necessary building heat conditions, will help to better pinpoint when building heating requirements are truly necessary.

During the winter season, building heat is required for Big Stone and Coyote to operate. Failure to provide building heat would result in freezing plant components and reduced reliability. Building heat is primarily provided through standard plant operations. While both Big Stone and Coyote maintain building heat that is independent of plant operations, called the auxiliary boiler, it is considered a back-up heating system and is not designed to be the primary source of heat for the plant. The auxiliary boiler was designed and sized to initiate unit startup after being offline. When the plant is online and committed, the auxiliary boiler functions as intended, as a back-up heating system for emergency situations.

In cold weather temperatures, if the plants are not operating, the risk to Big Stone and Coyote is twofold. First, if the auxiliary boiler fails, there is no redundant heating system. Second, and more importantly, if the auxiliary boiler fails, there would not be a means to initiate startup of the plant. If the auxiliary boiler trips for any reason it must be immediately repaired. Based upon experience, Otter Tail Power knows it would take up to a week to bring in a temporary boiler to heat the plant, and it would not be possible to avoid component freezing and damage in that scenario.

From a winter operations standpoint, the likelihood of Big Stone and Coyote being available to respond to a winter storm event is much higher if the plants are already online. If the plants have been offline for a period of time, the chance of a smooth startup and commitment is lower, reducing plant reliability.

Based on observation of internal and external temperatures, plant engineers determined that at an average daily temperature of 35 degrees the plant would retain enough residual heat to prevent any damage to its components. At this average daily temperature, the plant could be safely shut down and would not require the auxiliary boiler to run for plant heat.

Starting in October of 2023, Otter Tail Power began recording daily 7-day temperature forecasts at both Big Stone and Coyote. As noted above, if the 7-day average temperature forecast is less than 35 degrees (average of the daily high and daily low averaged across 7 days), self-commitment is determined to be required for building heat purposes.

Finally, it should also be noted it is possible that multiple unavoidable self-commitment reasons may be present at any given time. For example, when self-commitment for building heat is required, non-Otter Tail Power co-owners may also request continued self-commitment due to expected SPP market conditions.

c. Plant startup conditions (e.g. cold, warm, or hot)

Attachments 2 and 3 identify designations for plant startup conditions for each startup occurrence.

d. Equivalent Forced Outage Rate information to be tracked over time

The following table provides the Equivalent Forced Outage Rate for both Big Stone and Coyote for the past ten years and by month in 2024. The method and formula for calculating Equivalent Forced Outage Rate can be found on the NERC website.[7]

Table 3
Equivalent Forced Outage Rates

Year	Big Stone	Coyote
	[PROTECTED DATA BEGINS…	
2015		
2016		
2017		
2018		
2019		
2020		
2021		
2022		
2023		
2024		

…PROTECTED DATA ENDS]

[7] https://www.nerc.com/pa/RAPA/gads/Pages/Data%20Reporting%20Instructions.aspx.

2024	Equivalent Forced Outage Rate (EFOR)	
Month	**Big Stone**	**Coyote**
	[PROTECTED DATA BEGINS…	
Jan		
Feb		
Mar		
Apr		
May		
Jun		
Jul		
Aug		
Sep		
Oct		
Nov		
Dec		
Total		

…PROTECTED DATA ENDS]

e. Descriptions of changes to operating procedures and physical modifications to units to ensure plants are becoming more flexible to meet upcoming challenges as applicable.

Otter Tail Power continually assesses operating procedures and physical modifications to both Big Stone and Coyote to increase flexibility. These types of changes often involve operating outside the original design parameters of the units or operating in conditions that have not been experienced previously. Every potential change is well thought out and designed and requires testing and validation under extended periods of operation. Therefore, small changes over long periods of time are required to ensure that negative impacts do not outweigh the positive results.

In April 2016, Big Stone lowered the minimum operating load from **[PROTECTED DATA BEGINS…**

…PROTECTED DATA ENDS]. Procedure changes required to accommodate this included shutting down one scrubber train and one boiler feed pump. These lower loads contributed to ash build up in the flue gas duct at the boiler exit. In October 2020, modifications were made to the duct to reduce the ash build up. After months of operation, it was determined that this modification was successful in reducing the ash accumulation.

To further increase flexibility, Big Stone performed more testing in late 2021 to reduce the minimum load from **[PROTECTED DATA BEGINS…**

..PROTECTED DATA ENDS]. Control logic and procedure changes were required, including reducing the boiler minimum air flow trip setting after consulting with Boiler OEM, modifying the boiler excess air curve, and valving in auxiliary steam from the main steam drum. The Big Stone co-owners approved operations at the new minimum load effective April 1, 2022.

Coyote also tested and successfully implemented the lowering of its minimum operating load from **[PROTECTED DATA BEGINS…**
…PROTECTED DATA ENDS]. Lowering the minimum operating load was made possible by the replacement of a bottom ash handling system that was completed in compliance with Coal Combustion Residual rules in 2019. Similar to Big Stone, Coyote tested a new minimum load of **[PROTECTED DATA BEGINS…**
..PROTECTED DATA ENDS]. This new minimum at Coyote is now in place at ambient temperatures greater than 32 degrees F.

Another change implemented to increase flexibility at Coyote is the installation of fuel analysis equipment in 2019. This equipment provides Coyote staff the ability to instantly analyze the quality of coal delivered to the plant from the adjacent mine. If coal quality is unacceptable, Coyote staff notifies the mine and higher quality coal is delivered. The result of installing the new equipment and implementing procedures to work with the mine has significantly reduced fuel related limitations on boiler cleanliness across all load ranges.

In the spring of 2024, Coyote began a program feeding a magnesium oxide product into the furnace to aid in the operation of the unit. This product is blown into the gas stream and bonds to the ash particles as the heat is being transferred from the gas stream to the furnace wall and convection pass tubes. The product inhibits the bonding of the ash to the tubes making the ash much easier to clean with the conventional equipment that already exists in the boiler. The ability to keep the boiler and tubes cleaner increases the efficiency of the boiler and enables the unit to respond to market demands better. The program was a test during 2024 and the results were very successful. The program is planned to continue going forward.

G. *The Commission directs Xcel Energy, Minnesota Power, and Otter Tail to 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.*

Otter Tail Power Response
Representatives from Minnesota Power, Otter Tail Power, and Xcel Energy met on January 24, 2022, to discuss a consistent methodology for reporting the required data. Column N in a plant's *Self-Commitment Hourly Template* tab will be used to provide variable portions of fuel costs and column O will be used to provide fixed portions of fuel costs if applicable. The Otter Tail Power fixed fuel costs, column O, have been converted into an hourly value (total monthly fixed costs divided by total

monthly MWhs produced) for calculation purposes and to fit the hourly reporting format. It is Otter Tail Power's understanding, based on the conversations among the utilities, that Otter Tail Power is the only company that would have fixed fuel cost components factored into the analysis.

H. *The Commission requires the utilities to work together to develop a consistent method for estimating the best-case and worst-case potential for economic commitment for each plant.*

Otter Tail Power Response
During the meeting on January 24, 2022, the utilities discussed methods for estimating the best-case and worst-case potential for economic commitment. Otter Tail Power's analysis is included in Section 4 of this filing.

I. *The Commission requires the inclusion of 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 Power Response
MISO market conditions are included in Attachment 2 and Attachment 3. Net benefits for Otter Tail Power are based on MISO market pricing and are discussed in Section 4 and detailed in Attachment 2 and Attachment 3. Otter Tail Power has also included SPP hourly LMP pricing for Big Stone and Coyote in columns AN and AO of Attachment 2 and Attachment 3.

J. *The Commission requires the inclusion 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.*

Otter Tail Power Response
The Total Plant Offer Optimization Plan and Combined Modeling of MISO Co-Owner Generation Shares Plan are potential initiatives, suggested by Otter Tail Power to the other co-owners, that may improve efficiencies and overall economic plant performance. All co-owners maintain historical awareness of these potential initiatives and have each considered the pros and cons of advancement. Moving forward with either of these initiatives would require unanimous consent from all co-owners (less Northwestern Energy on the Combined Modeling of MISO Co-Owner Generation Shares Plan). In February 2025, Otter Tail Power again inquired of each co-owner regarding their interest in pursuing one or both plans. In response to the Otter Tail Power February 2025 inquiry, none of the other co-owners supported advancing either proposal.

K. *The Commission requires the inclusion of avoided carbon dioxide emissions due to economic commitment along with plant level carbon dioxide emissions in subsequent filings using the Department's recommended method.*

Otter Tail Power Response
Using the Department's recommended method, the calculated avoided carbon dioxide emissions due to economic commitment were 90,400 tons at Big Stone[8] and 4,012 tons at Coyote. Plant level carbon dioxide emissions are presented in Table 2.

L. *The Commission requires the inclusion of energy MWh produced and curtailed from utility owned and contracted wind facilities monthly for each facility*

Otter Tail Power Response
Attachment 7 provides energy MWh produced and curtailed from utility owned and contracted wind facilities. Monthly MWh production is provided for each facility, and monthly curtailment is provided for contracted wind facilities. The curtailment for Otter Tail Power owned facilities is provided as an annual total for each facility.

4. ANALYSIS RESULTS:

For the 2024 reporting period, the market revenues and plant costs for market operations at Big Stone and Coyote are detailed in the narrative and summary tables below.

General 2024 Market Conditions
The ten-year history of average, annual, day ahead, LMP pricing at Big Stone and Coyote pricing nodes are reflected in Table 4 below:

Table 4
DA LMP Average Hourly Price History

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Big Stone Plant	$20.57	$19.08	$21.20	$25.30	$20.08	$13.74	$15.54	$19.40	$13.30	$11.45
Coyote Station	$20.26	$17.44	$20.34	$24.82	$20.39	$13.30	$25.76	$38.27	$25.37	$24.22

The low 2020 LMP pricing levels were driven by several factors, including, but not limited to, low natural gas markets, continued renewable resource penetration, and impacts to load driven by the COVID-19 pandemic. System wide 2021 prices increased as compared to pricing in 2020, largely driven by natural gas price increases. The 2022 pricing increased substantially over 2021 due to further increases in the natural gas markets, reduced natural gas storage levels, and market uncertainty across the winter season due to historical winter storm events. The 2023 market pricing experienced a reduction in pricing, once again driven by reduced natural gas pricing and increased levels of natural gas storage. The 2024 market pricing was slightly lower, yet comparable, to 2023 pricing. The 2024 natural gas pricing, with the exception January, was slightly lower than 2023. While Coyote tends to follow market wide pricing patterns more closely, elevated system congestion at Big Stone

[8] Calculated by multiplying the annual average carbon dioxide emission rate in Table 2 of 2,825 lb/MWh by the minimum Big Stone output by the number of hours on economic commitment at zero megawatts.

remained, keeping localized LMP pricing suppressed lower than the rest of the market. As mentioned in previous filings, as renewable resource penetration continues to grow, it is necessary to upgrade the transmission system. These upgrades often result in long-term, yet temporary, line outages, which act to exacerbate already constrained areas, increasing congestion within those transmission pockets. Big Stone is located within such a pocket. As Big Stone regional transmission system upgrades and outages are completed, congestion in this transmission constrained region should improve but only if the rate of transmission export expansion exceeds the rate of new generation siting.

Big Stone Plant

For the 2024 reporting period, the revenues, costs, and net benefits/costs of market operations for Big Stone are reflected in Table 5 below. Table 5 compares the Big Stone market revenues against both variable costs and variable costs combined with fixed fuel costs.

Table 5
Big Stone Plant Net Benefit/Cost Summary 2024

Revenue	Variable Cost	Variable Cost Net Benefit / (Cost)	Variable Cost Plus Fixed Fuel Cost	Variable Cost Plus Fixed Fuel Cost Net Benefit/ (Cost)
[PROTECTED DATA BEGINS…				
				…PROTECTED DATA ENDS]

Revenues include MISO energy payments, ASM payments, and make whole payments. These revenues are reported on an hourly basis in columns T, U, and AA of the *Self-Commitment Hourly Template* tab in Attachment 2. Monthly summaries for Big Stone are included in Attachment 1 to this filing.

Variable costs include fuel for generation, reagents (i.e., lime, activated carbon, ammonia), emission allowances, and miscellaneous operation and maintenance costs (largely water treatment chemicals). Variable costs are reported on an hourly basis in column AC of the *Self-Commitment Hourly Template* tab in Attachment 2. Due to the co-ownership of Big Stone, and varying commitment and dispatch patterns of each co-owner, Otter Tail Power reports variable costs using an average per MWh cost by month which can be found in columns N, P, and Q of the *Self-Commitment Hourly Template* tab in Attachment 2.

Fixed fuel costs include train lease costs. Variable costs plus fixed fuel costs are reported on an hourly basis in column AD of the *Self-Commitment Hourly Template* tab in Attachment 2. Like variable costs, Otter Tail Power reports fixed fuel costs using an average per MWh cost by month (total fixed monthly fuel costs divided by MWhs generated in the month) which can be found in column O of the *Self-Commitment Hourly Template* tab in Attachment 2.

Figure 1 provides a year-over-year comparison for Big Stone revenues and total costs from 2017-2024. It shows that Big Stone's costs of operations have remained stable over the

period, and that Markets have turned higher following lows in 2020. Otter Tail Power expects markets will be more volatile and uncertain in the future.

Figure 1
Big Stone Revenue and Fuel Cost

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Once again, it should be emphasized that Big Stone is a co-owned unit, operating in two markets, and that Otter Tail Power is obligated to self-commit its share of the plant if any other co-owner, MISO, or SPP commits a co-owner's share of the unit.

At the end of 2019, Otter Tail Power led the development of Big Stone economic offer capability for the co-owners. This capability was implemented near the end of April 2020. In 2024, Big Stone co-owners utilized economic offers in the months of March, April, May, October, and November.

Big Stone experienced one extended outage in 2024. This outage was the plant's scheduled fall maintenance outage occurring September 26, 2024 through October 19, 2024.

It should also be emphasized that for significant periods of 2024, Otter Tail Power was obligated to self-commit its share of the plant. The largest drivers in forced self-commitment were due to building heat requirements during cold winter months and co-owner requests to self-commit. Co-owner self-commitment requests were often driven by higher LMP pricing in the SPP market. At the Big Stone node, SPP day ahead market pricing was 73 percent higher than MISO pricing. The 2024 day ahead Big Stone pricing in SPP averaged $19.82 per MWh versus $11.45 per MWh in MISO. This considerable price difference can result in significantly divergent commitment and dispatch patterns.

In past filings, Otter Tail Power provided additional analysis comparing Big Stone Actual performance against Otter Tail Power endorsed hours of self-commitment. In this 2024 filing, this analysis has been greatly simplified as there were no days in 2024 where Otter Tail Power called for Big Stone self-commitment outside of needs for building heat and plant

testing. Table 6 reflects total hours, revenue, variable costs, and net benefit. Hourly calculations for this analysis can be found in columns AG through AL of the *Self-Commitment Hourly Template* tab in Attachment 2.

Table 6
Big Stone Plant Performance under OTP Endorsed Self-Commitment Hours – Outside of Required Building Heat and Plant Testing Periods 2024

Scenario	Hours	Revenue	Variable Costs	Variable Cost Net Benefit / Cost
	[PROTECTED DATA BEGINS...			
2024 OTP Endorsed Hours of Self-Commitment Outside of Building Heat and Plant Testing Periods				
				...PROTECTED DATA ENDS]

Throughout 2024, outside of building heat and plant testing requirements, Otter Tail Power has consistently called for utilization of an economic offer at Big Stone. The above analysis primarily demonstrates that Otter Tail Power is making prudent self-commitment decisions for Big Stone. However, it should be noted and emphasized that Otter Tail Power recommendations for economic commitment are often superseded by other co-owner requests for self-commitment.

In summary, periods of lower LMP pricing driven by reduced natural gas markets, combined with hours of co-owner requests for self-commitment, resulted in marginally negative 2024 net benefits (market revenues less production costs). While periods of economic offers and economic decommitment were limited, the plant's ability to ramp between minimum and maximum output during market fluctuations worked to optimize economic performance. Otter Tail Power will continue to work with its co-owners to improve and enhance future plant performance.

Coyote Station
Table 7 below compares the Coyote market revenues against both variable costs, and variable costs combined with fixed fuel costs, for the 2024 reporting period.

Table 7
Coyote Station Net Benefit/Cost Summary 2024

Revenue	Variable Cost	Variable Cost Net Benefit / (Cost)	Variable Cost Plus Fixed Fuel Cost	Variable Cost Plus Fixed Fuel Cost Net Benefit/ (Cost)
[PROTECTED DATA BEGINS…				
				…PROTECTED DATA ENDS]

Revenues include MISO energy payments, ASM payments, and make whole payments. These revenues are reported on an hourly basis in columns T, U, and AA of the *Self-Commitment Hourly Template* tab in Attachment 3.

Variable costs include the variable component of the mine fuel invoice for delivered lignite **[PROTECTED DATA BEGINS… …PROTECTED DATA ENDS]**, reagents costs (i.e., lime and activated carbon), coal conversion tax, and miscellaneous variable operation and maintenance costs (largely water treatment costs). Variable costs are reported on an hourly basis in column AC of the *Self-Commitment Hourly Template* tab in Attachment 3. Due to the co-ownership of Coyote, and varying commitment and dispatch patterns of each co-owner, Otter Tail Power reports variable cost using an average per MWh cost by month which can be found in columns N, P, and Q of the *Self-Commitment Hourly Template* tab in Attachment 3.

Fixed fuel costs include the fixed component of the mine fuel invoice for delivered lignite **[PROTECTED DATA BEGINS… …PROTECTED DATA ENDS]**. Variable costs plus fixed fuel costs are reported on an hourly basis in column AD of the *Self-Commitment Hourly Template* tab in Attachment 3. Like variable costs, Otter Tail Power reports fixed fuel costs using an average per MWh cost by month (total fixed monthly fuel costs divided by MWhs generated in the month) which can be found in column O of the *Self-Commitment Hourly Template* tab in Attachment 3.

Figure 2 provides a year-over-year comparison for Coyote revenues and total costs (fixed and variable) from 2017-2024. Like Figure 1 did for Big Stone, Figure 2 shows that Coyote's costs of operations have remained stable over the period and that markets have turned higher following lows in 2020. Otter Tail Power expects markets will be more volatile and uncertain in the future. Taken together, Figures 1 and 2 demonstrate that the perceived "net benefit/costs" of Big Stone and Coyote in this docket have largely been driven by the prices available in the energy markets (which have been highly variable) not by the production costs of the plants (which have been very stable).

Figure 2
Coyote Revenue and Fuel Cost

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As reported in the above section describing the Coyote fuel contract, Coyote is fueled by the Coyote Creek mine. As a result of this fuel source, and the contract structure described above, much of the fuel costs for Coyote are fixed. This means Otter Tail Power is obligated to pay for these costs whether or not the fuel is consumed to generate electricity. These fixed costs equate to sunk costs and do not play a role in appropriately developing market offers on a day-to-day basis. As such, Otter Tail Power maintains it is appropriate to judge Coyote's commitment and dispatch decisions based on variable costs, not variable costs plus fixed fuel costs.

Throughout 2020 and early 2021, the co-owners worked toward the development of Coyote economic offer capability. At the end of April 2021, Coyote co-owners implemented coordinated offer processes that allowed for joint economic offer capability. On May 1, 2021, Coyote was economically decommitted for the first time.

Once again it should be emphasized that Coyote is a co-owned unit, operated in two markets, and that Otter Tail Power is obligated to self-commit its share of the plant if any other co-owner or either MISO or SPP commit a co-owner's share of the unit. In 2023, the largest drivers in forced self-commitment were due to building heat requirements during cold winter months and co-owner requests to self-commit. This resulted in significant periods where Otter Tail Power was obligated to self-commit its share of Coyote. In 2024, Coyote co-owners utilized economic offers in the month of October.

Coyote experienced three extended outages in 2024. Two outages were related to tube/steam leaks, May 1, 2024, through May 8, 2024, and September 18, 2024, through October 2, 2024. The third extended outage was for spring maintenance occurring May 12, 2024, through May 22, 2024.

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At the Coyote node, SPP market pricing was approximately 6.7 percent higher than MISO pricing. The 2024 Coyote pricing in SPP averaged $25.86 per MWh versus $24.22 per MWh in MISO.

In past filings, Otter Tail Power provided additional analysis comparing Coyote Station actual performance against Otter Tail Power endorsed hours of self-commitment. Like Big Stone in this 2024 filing, this analysis has been greatly simplified as there were no days in 2024 where Otter Tail Power called for Coyote Station self-commitment outside of needs for building heat and plant testing. Table 8 reflects total hours, revenue, variable costs, and net benefit. Hourly calculations for this analysis can be found in columns AG through AL of the *Self-Commitment Hourly Template* tab in Attachment 3.

Table 8
Coyote Station Performance under OTP Endorsed Self-Commitment Hours – Outside of Required Building Heat and Plant Testing Periods 2024

Scenario	Hours	Revenue	Variable Costs	Variable Cost Net Benefit / Cost
	[PROTECTED DATA BEGINS...			
2023 OTP Endorsed Hours of Self-Commitment				
				...PROTECTED DATA ENDS]

Throughout 2024, outside of building heat and plant testing requirements, Otter Tail Power has consistently called for utilization of an economic offer at Coyote Station. The above analysis primarily demonstrates that Otter Tail Power is making prudent self-commitment decisions for Coyote Station. However, it should be noted and emphasized that Otter Tail Power recommendations for economic commitment are often superseded by other co-owner requests for self-commitment.

In summary, despite periods of lower LMP pricing driven by reduced natural gas markets and reduced localized market congestion at Coyote, the net benefit (market revenues less production costs) remained positive at Coyote from a variable fuel cost standpoint. Net benefits were marginally negative when considering variable fuel costs plus fixed fuel costs. While periods of economic offers and economic decommitment were limited, the plant's ability ramp between minimum and maximum output during market fluctuations worked to optimize economic performance. Otter Tail Power will continue to work with its co-owners to improve and enhance future plant performance.

Item Z

The following reporting item z, was set forth in Attachment A of the Commission's January 11, 2021 Order in Docket No. E-999/CI-19-704:

> *z) 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).*

Item z, i, length of minimum decommit time for each unit, which Otter Tail Power interprets as the combined cool down time and startup notification time, were described earlier in this filing and are listed in Table 1.

In Otter Tail Power's review of the 2020 filing requirements, items z, ii through z, iv were ambiguous and difficult to answer. Otter Tail Power was uncertain about how to accurately develop the requested analysis. Prior to completion of the 2020 compliance filing, Otter Tail Power brought the issue to the other utilities, stakeholders, and the Department, as part of the required data template compliance filing meetings. Through these joint discussions, the utilities and stakeholders agreed that the language of item z was not specific enough to provide adequate direction to develop the requested analysis. Ultimately, Fresh Energy and The Sierra Club agreed to define and develop a calculation methodology for items z, ii through z, iv, which they then shared with the utilities and the Department. After a few relatively minor utility revisions, all parties came to agreement on the new item z calculation methodology. This new calculation directly utilizes the data provided within the agreed upon compliance filing template. For the 2024 compliance filing, Otter Tail Power continues to use the jointly developed, 2020 item z calculation methodology. Item z data and calculations can be found in Attachments 2 and 3 on the *Consecutive Hours* and *Item Z Summary* tabs.

The item z calculation essentially asks four questions relating to 2024 operations:

1. How many times throughout the 2024 operating year did the unit maintain consecutive hours of operating losses greater than the minimum downtime of the plant (cool down time plus startup notification time)?
2. What were the cumulative operating losses of the occurrences identified in item 1?
3. How many of the occurrences in item 1 had operating losses greater than the startup cost of the unit?
4. What were the cumulative operating losses of the occurrences identified in item 3?

Note that this analysis does not account for additional startup costs that would be incurred with cycling the plant on and off.

The item z analysis was applied to both a variable cost scenario and a variable cost-plus-fixed-fuel cost scenario. Otter Tail Power completed the requested item z calculation utilizing a cold minimum downtime (hot to cold cooldown and cold startup notification times). Table 9 summarizes the item z analysis for Big Stone and Coyote.

Table 9
Big Stone and Coyote Item Z Summary Table

		Big Stone		Coyote	
		Variable Costs	Variable Costs Plus Fixed Fuel	Variable Costs	Variable Costs Plus Fixed Fuel
Line		**[PROTECTED DATA BEGINS...**			
1	No. of Occurrences Consecutive Hours of Operating Loss Exceeds Min Downtime				
2	Cumulative Operating Losses of Hours Identified in Line 1				
3	No. of Occurrences in Line 1 Where Operating Losses Exceeded Startup Costs				
4	Cumulative Operating Losses of the Occurrences Identified in Line 3				
			...PROTECTED DATA ENDS]		

While Otter Tail Power appreciates the intent of the above analysis, it is not representative of actual operational effectiveness or historical performance at Big Stone or Coyote. At both Big Stone and Coyote, the above occurrences are a result of the SPP market, building heat requirements, or co-owner requests, requiring the Otter Tail Power share of these jointly owned units to remain online and self-committed.

Economic Commitment Best and Worst-Case Estimate
On January 24, 2022, Otter Tail Power, Minnesota Power, and Xcel Energy met to discuss the Commission requirement that "utilities are to work together to develop a consistent method for estimating the best-case and worst-case potential for economic commitment for each plant." The utilities have commonly defined a "best-case" scenario to be 100 percent economic commitment and a "worst-case" to be 100 percent self-commitment. Otter Tail Power chose to utilize the existing and reported data set for this analysis (included in Attachment 2 and Attachment 3), while the other two utilities chose other processes to complete their analysis. The Otter Tail Power analysis is discussed below.

It is important to note, and emphasize, the results of the analysis below are estimates. It is not possible for Otter Tail Power to precisely calculate how the MISO and SPP market might have been committed and dispatched differently under different offer assumptions.

Otter Tail Power developed three cases for both Big Stone and Coyote utilizing historical 2024 market data.

1. Self-Commitment: In this analysis, the Otter Tail Power share of the plant was self-committed, on a 24-hour calendar day basis, whenever the unit was not in an outage. Unit dispatch above minimum output was based on historical DA and RT LMP pricing, utilizing the unit's heat input curve and cost of fuel and reagents. Market revenues were determined based on cleared DA and RT generation and historical

2024 DA and RT LMP pricing. The unit was not available for commitment and dispatch during historical 2024 outage periods. Whenever the unit returned from outage, cold startup costs were applied.

2. Economic – Otter Tail Power share is assumed to be independently committable and dispatchable: In this analysis, the Otter Tail Power share of the unit is assumed to be its own unique generator, independent of co-owner operational considerations. When the unit was online, future commitment and dispatch occur when market revenues exceed variable production costs. When the unit was offline, future commitment and dispatch occur when market revenues exceed variable production costs plus startup costs. Commitment decisions were based on a 24-hour calendar day basis. Commitment and dispatch decisions were based on historical DA and RT LMP pricing, utilizing the unit's heat input curve and cost of fuel and reagents. Market revenues were determined based on cleared DA and RT generation and historical 2024 DA and RT LMP pricing. The unit was not available for commitment and dispatch during historical 2024 outage periods. Whenever the unit returned from offline status, cold startup costs were applied. Forced self-commitment for building heat and testing needs were not enforced.

3. Economic – Otter Tail Power share constrained by unavoidable self-commitment: Case 3 is the same as case 2 except case 3 accounts for instances of unavoidable self-commitment. When 2024 historical instances of unavoidable self-commitment occur, the unit is required to come online regardless of prevailing market conditions. In this analysis, the unit can be committed by either favorable MISO market conditions or unavoidable self-commitment requirements.

Due to the complexities of commitment and dispatch analysis, several simplifying assumptions were required to model the above three case scenarios. Those assumptions are summarized below:

1. Unit commitment decisions were based on a calendar day basis, not an hour-by-hour basis.
2. The unit is only committable in the DA market, not the RT market (theoretically a baseload coal unit could be committed in the RT, but in practice this has very rarely occurred for Otter Tail Power units).
3. Co-optimization of ancillary services is not considered in this analysis. Commitment, dispatch, and market revenues are only based on energy.
4. Ramp rates are not accounted for in this analysis. Hour by hour dispatch was determined solely by market pricing, the unit's heat input curve, and cost of fuel and reagents.
5. Historical derates are not accounted for. It is assumed the unit maintains its full range of normal dispatch, econ min to econ max, for every hour the unit is not on outage. Economic minimum constraints associated with the Big Stone AQCS scrubber train transitions are not accounted for.
6. When an operating day contained one or more hours of outage, the unit's outage was assumed to be for the entire calendar day.
7. Minimum cool down and startup times are not considered in the analysis.
8. The analysis utilizes fuel costs and heat input curves in effect in January of 2025 for Coyote and Big Stone.

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It should be emphasized case 2 is not a possible, or even reasonable, operating status for the Otter Tail Power shares of Big Stone and Coyote. As discussed earlier in this filing, Otter Tail Power is obligated to self-commit our share of both Big Stone and Coyote whenever a co-owner requests, or MISO/SPP calls for, commitment of either unit. As such, Otter Tail Power included case 3 analysis to illustrate a more realistic measure of full economic offer capability. It should be further highlighted this analysis assumes all the economies of scale, associated with the total plant output of Big Stone and Coyote, would be achievable for plants sized equal to the Otter Tail Power ownership share. It is highly unlikely that smaller, independent, coal resources, sized equal to the Otter Tail Power ownership share, would maintain equivalent economies of scale.

Table 10 shows the tabular results of the modeled Big Stone 2024 best and worst-case economic commitment estimate analysis. Figures 3 and 4 show the same data in graphical format while also comparing the modeled data against the 2024 actual results reported in Table 5.

Table 10
Big Stone Plant 2024 Best and Worst-Case Economic Commitment Estimate

Case	Market Revenues	Startup Costs	Variable Production Costs	Net Market Revenues Less Variable Production and Startup Costs	Variable Plus Fixed Production Costs	Net Market Revenues Less Variable Plus Fixed Production and Startup Costs
[PROTECTED DATA BEGINS...						
Self-Commitment						
Economic Commitment: OTP Share Independently Committed and Dispatched						
Economic Commitment: OTP share Constrained by Unavoidable Self-Commitment						
...PROTECTED DATA ENDS]						

Figure 3
Big Stone Plant 2024 Best and Worst-Case Economic Commitment Estimate
Variable Production Costs

[PROTECTED DATA BEGINS…

…PROTECTED DATA ENDS]

Figure 4
Big Stone Plant 2024 Best and Worst-Case Economic Commitment Estimate
Variable Plus Fixed Production Costs

[PROTECTED DATA BEGINS…

…PROTECTED DATA ENDS]

Table 11 shows the tabular results of the modeled Coyote 2024 best and worst-case economic commitment estimate analysis. Figures 5 and 6 show the same data in graphical format while also comparing the modeled data against the 2024 actual results reported in Table 7.

Table 11
Coyote Station 2024 Best and Worst-Case Economic Commitment Estimate

Case	Market Revenues	Startup Costs	Variable Production Costs	Net Market Revenues Less Variable Production and Startup Costs	Variable Plus Fixed Production Costs	Net Market Revenues Less Variable Plus Fixed Production and Startup Costs
[PROTECTED DATA BEGINS…						
Self-Commitment						
Economic Commitment: OTP Share Independently Committed and Dispatched						
Economic Commitment: OTP Share Constrained by Unavoidable Self-Commitment						
						…PROTECTED DATA ENDS]

Figure 5
Coyote Station 2024 Best and Worst-Case Economic Commitment Estimate
Variable Production Costs

[PROTECTED DATA BEGINS…

…PROTECTED DATA ENDS]

Figure 6
Coyote Station 2024 Best and Worst-Case Economic Commitment Estimate
Variable Plus Fixed Production Costs

[PROTECTED DATA BEGINS…

…PROTECTED DATA ENDS]

In some instances, the 2024 actual net benefits fall outside of the "best-case" scenario of 100 percent economic commitment and a "worst-case" scenario of 100 percent self-commitment. As previously noted, development of the above analysis required modeling assumptions and simplifications. The assumption and simplifications can drive divergence from actual net benefits. Furthermore, considering market net benefits are calculated as the difference between market revenues and production costs, where in 2024 multiple production cost cases exceeded $25 million, the deltas between the actual results and the modeled results do not seem to be excessive. Even though the actual net benefits do not always fall within the bandwidth of the "best-case" and "worst-case" scenarios, they do fall close to those bandwidths, supporting the reasonableness of the modeling construct.

Hourly details for the Big Stone and Coyote 2024 best and worst-case economic commitment estimate analysis are included in Attachment 2 and Attachment 3, respectively, on the *Econ Commit BestWorst* tab.

Additional Discussion

Within the context of this docket, Otter Tail Power believes it is vital to highlight, and explain, the analytical value of comparing a plant's production costs against market revenues, and for what purposes that comparison is useful. Otter Tail Power believes there is potential for a misapplication of the production-cost-comparison-to market-price analysis in this docket. This comparison is useful in assessing the flexibility of a plant, but there are many cost-effective plants that have limited operational flexibility and would show "production cost losses", including most non-dispatchable renewable resources and many base load generators.

For illustration, Otter Tail Power performed the same production-cost-comparison-to-market-price for its wind PPA, Langdon II.[9] The results are proportionally greater production cost losses for the Langdon II PPA than either Coyote or Big Stone:

[9] The Langdon II PPA is intended to serve as a reasonable proof for the point made by this illustration.

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Table 12
Langdon II PPA Revenues and Costs
(OTP MN)

Year	Total Revenues[10]	PPA Cost	Net Gain / (Loss)
	[PROTECTED DATA BEGINS…		
2018			
2019			
2020			
2021			
2022			
2023			
2024			

…PROTECTED DATA ENDS]

Otter Tail Power expects all its wind PPAs (and other utilities' wind PPAs) would show similar, if not larger, negative results under this analysis. This analysis demonstrates the Langdon II wind PPA's (or other PPA's) inability to respond flexibly to market prices and does not indicate the cost-effectiveness of the wind PPA to Otter Tail Power's resource portfolio. Wind generators frequently operate at low market price times and are frequently unavailable at high market price times. However, they produce energy at consistent prices over time and contribute cost-effectively to Otter Tail Power's resource portfolio.

The same has generally been true for Otter Tail Power's baseload resources: they are limited in their ability to respond to market prices. Like the wind generators, they have been able to produce energy at consistent prices over time and contribute cost effectively to Otter Tail Power's resource portfolio.

The questions in this docket aim to address whether baseload resources may operate more flexibly, given that increased flexibility might increase market opportunities in very low market conditions. While it is useful to consider these questions and how flexibility might be increased for the baseload units, baseload resources have limited flexibility in their ability to respond to market prices. If flexibility was the sole operational goal for generation resources, all generators would be natural gas peaking plants or other highly flexible alternatives. Neither renewable generators nor baseload generators fare well under these criteria.

The point of the illustration in Table 12 for the Langdon II wind PPA is to critique the implication that "production losses" solely determine cost effectiveness. "Production losses" only demonstrate whether a generator highly responds to market prices: many generators have not been designed for that purpose. The cost effectiveness of a generator requires other analyses of the type generally considered in resource plan proceedings. It involves market price forecasts and other forecasts, capacity expansion modelling, and other considerations.

[10] Energy, ancillary services, congestion, capacity and other.

Applying the production-cost-comparison-to market-price analysis to non-dispatchable renewables, natural gas peaking generators, and baseload generators may provide perspective of the spectrum of flexibility in generation resources. The non-dispatchable renewables have no ability to respond to the market and would fare most poorly to the analysis. Wind generators would likely have a high degree of inverse correlation to market price. Natural gas peaking generators dispatch flexibly in response to changes in market prices and would fare most favorably. Baseload generators fall somewhere in the middle: they were not designed to be flexible but are somewhat dispatchable depending on their specific design characteristics and other considerations. It is certainly a reasonable to consider whether it may be possible to increase their flexibility, but the lack of flexibility is not a fair indictment (when taken in isolation) of either renewables or baseload generation units.

The goal of a utility's resource planning is to manage a portfolio of resources in a way that meets cost, risk, and other objectives. If Otter Tail Power were to focus on cost alone as a resource planning objective, it would focus on the performance of the portfolio of resources under a variety of circumstances over time. Table 13 below reflects the actual cost of energy paid by Otter Tail Power's customers since 2014. It shows that Otter Tail Power's customers have benefitted from the Company's consistent and cost- effective portfolio of resources over that period.

Table 13
Net Cost of Energy Paid by Otter Tail Power Customers since 2014

Calendar Year	Net System Cost of Energy ($/MWh)
2014	25.15
2015	24.73
2016	23.06
2017	23.78
2018	24.14
2019	23.93
2020	20.30
2021	21.68
2022	25.89
2023	20.75
2024	18.36[11]

The production-cost-comparison-to-market-price used in this docket is useful in considering how greater responsiveness might improve the cost of energy. It should not suggest that renewables and baseload resources should be avoided because they are not adequately responsive to market prices.

[11] Calculation as proposed in Otter Tail's FCA true-up filing being submitted March 1, 2025, in Docket No. E017/AA-23-181.

PUBLIC DOCUMENT – NOT PUBLIC (OR PRIVILEGED) DATA HAS BEEN EXCISED

Capital Requirements

Attachment A of the January 11, 2021 Order in Docket No. E-999/CI-19-704 requires the Company to provide the capital revenue requirements, or reasonable estimates in approximation thereof, for all generation units. Otter Tail Power operates its system as a whole unit, and while it is possible to approximate a single rate base item, in this case generating units, carving out a single item is a narrow view of the overall impact on the cost of service.

Otter Tail Power provides Table 14 in compliance with this Order Point utilizing December 2023 FERC Form 1 information, which provides the gross plant in service less asset retirement costs [Line 1] per steam plant.[12] The accumulated depreciation [Line 2] was taken from depreciation records as of December 31, 2023. Minnesota share allocation factor is calculated using the base / peak split between E1 and D1. The 2021 allocation factors and rate of return were approved in the 2020 MN Rate Review[13] and are used for Table 14 calculations.

Table 14
Estimate of Capital Revenue Requirements
Rate Base 2023

	A	B	C
		Coyote	**Big Stone**
Line	**[PROTECTED DATA BEGINS…**		
1			
2			
3			
4			
5			
6			
7			
8			
9			
			…PROTECTED DATA ENDS]

[12] FERC Form 1, page 402, Total Cost [Line 17] less Asset Retirement Costs [Line 16] by steam plant.
[13] In the Matter of the Application of Otter Tail Power Company for Authority to Increase Rates for Electric Service in Minnesota MPUC Docket No. E017/GR-20-719.

5. CONCLUSION

The following conclusions can be drawn from the analysis conducted:

1. Market pricing in 2024 softened slightly as compared to 2023. The transmission constrained region of Big Stone experienced their lowest LMP prices in 10 years. Coyote LMPs, while slightly lower in 2024 compared to 2023, were less impacted by congestion, yet still well below the 10-year high (2022) and above the 10-year low (2020) pricing marks. Soft LMP pricing was impacted by reduced natural gas pricing and increased natural gas storage levels. As a result, market revenues paid to both Big Stone and Coyote remained reduced from 2022 levels.

2. Even before factoring all other benefits of reliable and dispatchable baseload resources, Coyote provided a significant net benefit to Otter Tail Power customers on a variable cost basis. Big Stone, while generating marginally negative net benefits on a variable cost basis, also provided reliable and dispatchable baseload energy.

3. Otter Tail Power continues to work with its Big Stone and Coyote co-owners to further optimize plant performance.

Big Stone and Coyote have both provided over four decades of reliable, dispatchable, and economical energy. Over this time, Otter Tail Power has utilized co-ownership to capture economies of scale, shared benefits, and reduced risk to the benefit of our customers.

Various portions and attachments to this filing contain information that Otter Tail Power considers trade secret. Otter Tail Power believes this filing comports with the Commission's Notice relating to Revised Procedures for Handling Trade Secret and Privileged Data, pursuant to Minn. R. 7829.0500. As required by the revised procedures, a statement providing the justification for excising the trade secret data follows this letter.

Otter Tail Power has electronically filed this document with the Commission. In compliance with Minn. R. 7829.1300, subp. 2, Otter Tail Power is serving a copy of this filing on the Minnesota Department of Commerce- Division of Energy Resources and the Minnesota Office of Attorney General-Residential Utilities Division and all parties on the attached service list. A Certificate of Service is also enclosed.

If you have any questions regarding this filing, please contact me at 218-739-8282 or at cbyrnes@otpco.com.

Sincerely,

/s/ CHRIS BYRNES
Chris Byrnes
Supervisor, Regulatory Analysis
Regulatory Economics

kaw
Enclosures
By electronic filing
c: Service List

STATEMENT REGARDING JUSTIFICATION FOR EXCISING TRADE SECRET INFORMATION

Please note that Otter Tail Power Company has marked the following portions of this filing with the caption **NOT PUBLIC DOCUMENT – NOT FOR PUBLIC DISCLOSURE**, according to Minn. Stat. § 13.37, subd. 1(b). This statute protects certain "government data," as that term is defined at Minn. Stat. § 13.02, Subd. 7, from being disclosed by an administrative agency to the public.

- Tables 1, 3, 5, 6, 7, 8, 9, 10, 11, 12, and 14 in the filing letter – Plant specific economic information.
- Figures 1-6 in the filing letter – Plant specific economic information
- Attachment 1 in its entirety – Plant specific economic information
- Attachment 2 in its entirety – Plant specific economic information
- Attachment 3 in its entirety – Plant specific economic information
- Attachment 4 in its entirety – Plant specific operating information
- Attachment 5 in its entirety – Plant specific economic information
- Attachment 6 in its entirety – Plant specific economic information
- Attachment 7 in its entirety – Facility specific economic information

The information being supplied in this filing is considered to be a "compilation" of data that (1) was supplied by Otter Tail Power Company, (2) is the subject of reasonable efforts by Otter Tail Power Company to maintain its secrecy, and (3) derives independent economic value, actual or potential, from not being generally known to or accessible to the public. Otter Tail Power has contractual obligations to maintain the confidentiality of this information, and this information, if publicly disclosed, could put Otter Tail Power Company at a competitive disadvantage to the detriment of the Company's customers.

It is Otter Tail Power Company's understanding that marking the filing in this manner is consistent with the revised procedures for handling trade secret and privileged data, as announced in the joint memorandum of the Office of Energy Security and Public Utilities Commission dated August 18, 1999, and which became effective September 1, 1999.

2024 Actual Big Stone Plant Performance Under Variable Costs and Under Variable and Fixed Costs

Row Labels	Net MISO Energy Payment [PROTECTED DATA BEGINS...	ASM Payments	Make Whole Payments	Variable Production Costs	Net Variable (Cost) or Benefit	Variable & Fixed Production Costs	Net Variable & Fixed (Cost) or Benefit
Jan							
Feb							
Mar							
Apr							
May							
Jun							
Jul							
Aug							
Sep							
Oct							
Nov							
Dec							
Grand Total							

...PROTECTED DATA ENDS]

2024 Big Stone OTP Endorsed Self Commitment Performance (Outside of Required Builiding Heat and Plant Testing Periods): Utilization of Variable Costs

Row Labels	Net MISO Energy Payments [PROTECTED DATA BEGINS...	ASM Payments	Make Whole Payments	Variable Production Costs - OTP Endorsed Self-Commit Hours	Net Variable (Cost) or Benefit - OTP Endorsed Self-Commit Hours
Jan					
Feb					
Mar					
Apr					
May					
Jun					
Jul					
Aug					
Sep					
Oct					
Nov					
Dec					
Grand Total					

...PROTECTED DATA ENDS]

2024 Actual Coyote Station Plant Performance Under Variable Costs and Under Variable and Fixed Costs

Row Labels	Net MISO Energy Payment [PROTECTED DATA BEGINS...	ASM Payments	Make Whole Payments	Variable Production Costs	Net Variable (Cost) or Benefit	Variable & Fixed Production Costs	Net Variable & Fixed (Cost) or Benefit
Jan	$						
Feb	$						
Mar	$						
Apr	$						
May	$						
Jun	$						
Jul	$						
Aug	$						
Sep	$						
Oct	$						
Nov	$						
Dec	$						
Grand Total	$						

...PROTECTED DATA ENDS]

2024 Coyote Station OTP Endorsed Self Commitment Performance (Outside of Required Builiding Heat and Plant Testing Periods): Utilization of Variable Costs

Row Labels	Net MISO Energy Payments [PROTECTED DATA BEGINS...	ASM Payments	Make Whole Payments	Variable Production Costs - OTP Endorsed Self-Commit Hours	Net Variable (Cost) or Benefit - OTP Endorsed Self-Commit Hours
Jan					
Feb					
Mar					
Apr					
May					
Jun					
Jul					
Aug					
Sep					
Oct					
Nov					
Dec					
Grand Total					

...PROTECTED DATA ENDS]

Annual Non-Fuel Variable Expenses
(Reagents, Water, Emissions Allowances)

Plant		2024
Big Stone	**[PROTECTED DATA BEGINS...**	$
Coyote		$
		...PROTECTED DATA ENDS]

Annual Fixed O&M Expenses

Plant		2024
Big Stone	**[PROTECTED DATA BEGINS...**	$
Coyote		$
		...PROTECTED DATA ENDS]

Otter Tail Power Company
Plant Heat Rates

Big Stone Plant	**2024**
	[PROTECTED DATA BEGINS…
Average Heat Rate at economic minimum	
Average Heat Rate at economic maximum	
Coyote Station	**2024**
Average Heat Rate at economic minimum	
Average Heat Rate at economic maximum	**…PROTECTED DATA ENDS]**

Big Stone Plant Actual Operations

			Only Variable Costs			
Start	End	Hour Range	Costs: Number of Occurences	Costs: For the Occurences Range	Costs: Number of Occurences with costs > cold start cost	Costs: For the Occurences with costs > cold start cost
[PROTECTED DATA BEGINS...						

...PROTECTED DATA ENDS]

Includes fixed fuel costs (Unit + Remaining Fuel + VOM)			
Costs: Number of Occurences	Costs: For the Occurences Range	Costs: Number of Occurences with costs > cold start cost	Costs: For the Occurences with costs > cold start cost
[PROTECTED DATA BEGINS...			

...PROTECTED DATA ENDS]

	Start Up Costs	Start Up Time	Cool-down time
	[PROTECTED DATA BEGINS...		
Cold			
Warm			

...PROTECTED DATA ENDS]

Coyote Station Actual Operations

			Only Variable Costs			
Start	End	Hour Range	Costs: Number of Occurences	Costs: For the Occurences Range	Costs: Number of Occurences with costs > cold start cost	Costs: For the Occurences with costs > cold start cost
[PROTECTED DATA BEGINS...						

...PROTECTED DATA ENDS]

Includes fixed fuel costs (Unit + Remaining Fuel + VOM)			
Costs: Number of Occurences	Costs: For the Occurences Range	Costs: Number of Occurences with costs > cold start cost	Costs: For the Occurences with costs > cold start cost
[PROTECTED DATA BEGINS...			

...PROTECTED DATA ENDS]

	Start Up Costs	Start Up Time	Cool-down time
	[PROTECTED DATA BEGINS...		
Cold			
Warm			

...PROTECTED DATA ENDS]

2024 PURCHASED POWER AGREEMENTS - WIND PURCHASES (MWh)

COMPANY	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
[PROTECTED DATA BEGINS...													

...PROTECTED DATA ENDS]

2024 PURCHASED POWER AGREEMENTS - CURTAILMENTS (MWh)

COMPANY	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
[PROTECTED DATA BEGINS...													

...PROTECTED DATA ENDS]

2024 NET GENERATION - OTTER TAIL OWNED (MWh)

	January	February	March	April	May	June	July	August	September	October	November	December	Total
	[PROTECTED DATA BEGINS...												
Langdon Wind													
Ashtabula Wind													
Luverne													
Merricourt													
Ashtabula III Wind													

...PROTECTED DATA ENDS]

2024 WIND CURTAILMENT - OTTER TAIL OWNED (MWh)

	[PROTECTED DATA BEGINS...												
Langdon Wind													
Ashtabula Wind													
Luverne													
Merricourt													
Ashtabula III Wind*													

...PROTECTED DATA ENDS]

*When Ashtabula III was purchased the curtailment tag was not included in the Purchase Agreement. Because of this OTP does not have access to the wind curtailment data. OTP requested the data from Nextera, but there are issues with SCADA and Nextera was unable to provide it at the time of filing. The repower of Ashtabula III should correct this with the issue with the curtailment tag.

CERTIFICATE OF SERVICE

RE: **In the Matter of an Investigation into Self-Commitment and Self-Scheduling of Large Baseload Generation Facilities**
Docket No. E999/CI-19-704

I, Kim Ward, hereby certify that I have this day served a copy of the following, or a summary thereof, on Will Seuffert and Sharon Ferguson by e-filing, and to all other persons on the attached service list by electronic service or by First Class Mail.

Otter Tail Power Company
Annual Compliance Filing

Dated this **27th** day of **February, 2025**.

/s/ KIM WARD
Kim Ward
Lead Regulatory Filing Coordinator
Otter Tail Power Company
215 South Cascade Street
Fergus Falls MN 56537
(218) 739-8268

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3	Sharon	Ferguson	sharon.ferguson@state.mn.us		Department of Commerce	85 7th Place E Ste 280 Saint Paul MN, 55101-2198 United States	Electronic Service		No	19-704Official
4	Allen	Gleckner	gleckner@fresh-energy.org	Fresh Energy		408 St. Peter Street Ste 350 Saint Paul MN, 55102 United States	Electronic Service		Yes	19-704Official
5	Kim	Havey	kim.havey@minneapolismn.gov	City of Minneapolis		350 South 5th Street, Suite 315M Minneapolis MN, 55415 United States	Electronic Service		No	19-704Official
6	Adam	Heinen	aheinen@dakotaelectric.com	Dakota Electric Association		4300 220th St W Farmington MN, 55024 United States	Electronic Service		No	19-704Official
7	Kristin	Henry	kristin.henry@sierraclub.org	Sierra Club		2101 Webster St Ste 1300 Oakland CA, 94612 United States	Electronic Service		No	19-704Official
8	Holly	Lahd	holly.lahd@target.com	Target Corporation		33 South 6th St CC-28662 Minneapolis MN, 55402 United States	Electronic Service		No	19-704Official
9	Leann	Oehlerking Boes	lboes@mnpower.com	Minnesota Power		30 W Superior St Duluth MN, 55802 United States	Electronic Service		No	19-704Official
10	Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	1400 BRM Tower 445 Minnesota St St. Paul MN, 55101-2131 United States	Electronic Service		Yes	19-704Official
11	Christine	Schwartz	regulatory.records@xcelenergy.com	Xcel Energy		414 Nicollet Mall FL 7 Minneapolis MN, 55401-1993 United States	Electronic Service		No	19-704Official
12	Will	Seuffert	will.seuffert@state.mn.us		Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul MN, 55101 United States	Electronic Service		Yes	19-704Official
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16	Laurie	Williams	laurie.williams@sierraclub.org	Sierra Club		Environmental Law Program 1536 Wynkoop St Ste 200 Denver CO, 80202 United States	Electronic Service		No	19-704Official