MINNESOTA
PUBLIC UTILITIES COMMISSION

Staff Briefing Papers

Meeting Date	October 28, 2020		Agenda Item 2 **
Companies	All Electric Utilities Northern States Power Company, doing business as Xcel Energy		
Docket Nos.	**E-999/CI-19-704** **In the Matter of an Investigation into Self-Commitment and Self-Scheduling of Large Baseload Generation Facilities** **E-002/M-19-809** **In the Matter of the Petition of Northern States Power Company for Approval of a Plan to Offer Generating Resources into the MISO Market on a Seasonal Basis.**		
Issues	1. Have the utilities provided adequate information in the March 2020 compliance filings on self-commitment? 2. Should the utilities be required to provide additional information or take additional steps regarding self-commitment at this time? 3. Are there any updates from Xcel Energy or potentially interested parties on the status of inquiries into Xcel Energy's plan to offer Sherco 2 and the King Plant into the MISO market on a seasonal basis?		
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✓ **Relevant Documents** | **Date**

Docket No. E-999/AA-18-373

Document	Date
PUC - Order	November 13, 2019

Docket No. E-999/CI-19-704

Document	Date
PUC Staff – Briefing Papers	February 27, 2020
PUC – Order Clarifying Filing Requirements and Schedule	May 4, 2020
PUC - Notice of Extended Reply and Response Comment Period	June 10, 2020
Reports	
Xcel Energy (TS)	February 28, 2020
Minnesota Power (TS)	March 2, 2020
Otter Tail Power Company (TS)	March 2, 2020
Comments	
Department of Commerce (TS)	June 8, 2020
Fresh Energy (TS)	June 9, 2020
Sierra Club (TS)	June 8, 2020
Reply Comments	
Xcel Energy	July 8, 2020
Minnesota Power	July 8, 2020
Otter Tail Power Company (TS)	July 8, 2020
Department of Commerce	July 8, 2020
Supplemental Comments	
Sierra Club – Surreply Comments (TS)	July 23, 2020
Commercial Customers with Clean Energy Goals – Response Comments	July 23, 2020
Fresh Energy – Response to Reply Comments (TS)	July 23, 2020
Department of Commerce – Comments	July 23, 2020

Relevant Documents	**Date**
Docket No. E-002/M-19-809	
Xcel Energy - Plan to Offer Generating Resources into the MISO Market	December 20, 2019
PUC - Notice of Comment Period	January 10, 2020
PUC – Briefing Papers	February 19, 2020
PUC - Briefing Papers	May 13, 2020
PUC - Order Approving Plan and Requiring Filing	July 15, 2020

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2. Should the utilities be required to provide additional information or take additional steps regarding self-commitment at this time?

3. Are there any updates from Xcel Energy or potentially interested parties on the status of inquiries into Xcel Energy's plan to offer Sherco 2 and the King Plant into the MISO market on a seasonal basis?

II. Introduction

On November 13, 2019, the Commission issued its Order[1] opening this investigation, and on December 13, 2019, issued its notice, in Docket CI-19-704, requesting procedural comments on the process and scope of this investigation. In March 2020, utilities with baseload production submitted reports on the utilization and profitability of their baseload generating facilities in calendar-year 2019. In June and July, 2020 parties submitted comments on the completeness and meaning of the information in those March 2020 reports. On the docket today are the questions of whether the reports are complete, and whether additional information is needed for this year (calendar-year 2020) and whether additional action should be taken at this time.

III. Background

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

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

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

Self-commitment allows a market participant to request that MISO commit a particular unit to run, regardless of market price. In MISO, this is referred to as "must run" status. Unless there

[1] ORDER ACCEPTING 2017-2018 ELECTRIC REPORTS AND SETTING ADDITIONAL REQUIREMENTS, In the Matter of the Review of the 2017-2018 Annual Automatic Adjustment Report for All Electric Utilities, Docket No. E-999/AA-18-373

is a reliability issue, MISO will commit the unit, at a minimum, to that unit's specified "economic" minimum output level. The unit acts as a price taker, accepting whatever the clearing price for that period happens to be. This may be below the unit's cost to generate. Depending on reliability needs and market prices, MISO may also commit the unit to production above economic minimum.

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

In its February 7, 2019, ORDER ACCEPTING 2016-2017 REPORTS AND SETTING ADDITIONAL REQUIREMENTS[2] the Commission discussed self-commitment and self-scheduling as follows:

> MISO markets identify the supply of electric generation available throughout the MISO regions, and the anticipated (and, in real time, the actual) demand for electricity in each area, selecting generators for dispatch in a manner designed to minimize overall costs to the system while meeting reliability requirements. MISO unit commitment is the process that determines which generators (and other resources) will operate to meet the upcoming need. MISO scheduling and dispatch sets the hourly output for each committed resource, using simultaneously co-optimized Security Constrained Unit Commitment and Security Constrained Economic Dispatch to clear and dispatch the energy and reserve markets. A market participant—that is, anyone registered for participation in MISO markets—can specify the production cost of its generator, and MISO will refrain from dispatching the resource until market prices meet or exceed that level, again, subject to reliability requirements. But under some circumstances a participant will prefer to commit its generator to be available for MISO dispatch ("self-commit"), and unilaterally set the generator's output level ("self-schedule"), accepting whatever market price results rather than awaiting economic dispatch by MISO.
>
> Renewable sources of generation have the advantage of incurring no fuel costs, which tends to reduce their operating costs and make them attractive options for MISO dispatch. However, self-committed and self-scheduled generators may displace these resources—even if, at any given moment, the renewable resource had lower operating costs.

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

At the Commission's October 10, 2019, electric Annual Automatic Adjustment (AAA) agenda meeting, the parties requested, and the Commission agreed, that the issues surrounding self-

[2] In the Matter of the Review of the 2016-2017 Annual Automatic Adjustment Reports for All Electric Utilities, Docket No. E-999/AA-17-492, and In the Matter of the Review of the 2017-2018 Annual Automatic Adjustment Reports for All Electric Utilities, Docket No. E-999/AA-18-373

commitment and self-scheduling be moved to a separate docket to provide a more focused forum for these issues. Thus, the Commission opened an investigation in this docket to require Minnesota Power, Otter Tail, and Xcel Energy to report their future self-commitment and self-scheduling analyses using a consistent methodology by including fuel cost and variable Operations and Maintenance (O&M) costs.

In its November 13, 2019 ORDER ACCEPTING 2017-2018 ELECTRIC REPORTS AND SETTING ADDITIONAL REQUIREMENTS (November 13, 2019 Order),[3] the Commission:

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

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

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

    Hourly data for all units:

    a) Date and hour
    b) Commit status (Null / Economic / Emergency / Must Run / Outage / Not Participating)
    c) Dispatch Status for Energy (Null / Economic / Self Schedule)
    d) Cleared MW
    e) Day ahead locational marginal price at unit node
    f) Real time MW adjustment
    g) Real time locational marginal price at unit node
    h) Day ahead dispatch minimum
    i) Real time dispatch minimum
    j) Fuel cost ($/MWh)
    k) Variable operations and maintenance costs ($/MWh)

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

l) Day ahead locational marginal price representative of utility load zone
m) Real time locational marginal price representative of utility load zone
n) Whether Day Ahead Cleared = Day Ahead Dispatch Minimum (0 or 1)
o) Actual production in MWh (for all 8,760 hours of the year)
p) Day ahead MISO payment
q) Real time MISO payment
r) Net MISO energy payment
s) Production costs ((J+K) * O)
t) Net cost or benefit (R-S)

Monthly or annual data for all units:

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

A. PUC Investigation into Self-commitment and Self-scheduling of Large Baseload Generation Facilities – Docket E-999/CI-19-704

Docket No. E-999/CI-19-704 was opened to investigate the use of self-commitment and self-scheduling by the regulated electric utilities in Minnesota. On December 13, 2019, the Commission issued its notice requesting procedural comments. On January 10, 2020, the parties filed initial comments on the scope of this investigation, with reply comments filed on January 28, 2020. In these comments the parties raised the question of the period covered by the reporting required in the November 13, 2019 Order, with various parties suggesting different time periods for the first set of comments, which were received on and around March 1, 2020 from Minnesota Power, Xcel Energy, and Otter Tail Power Company (Otter Tail).

The Commission took up this docket on February 29, 2020 and provided clarification on filing requirements and deadlines.[4] On June 8, 2020, the Department of Commerce Division of Energy Resources (Department), Fresh Energy, and Sierra Club provided comments on the first round of reporting from the utilities. On July 8, 2020, Xcel Energy, Minnesota Power, Otter Tail, and the Department provided reply comments, and on July 23, 2020, Sierra Club, Fresh Energy, Commercial Customers with Clean Energy Goals (Commercial Customers), and the Department provided response to the reply comments.

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

B. Xcel Energy Seasonal Dispatch Plan - Docket No. E-002/M-19-809

On December 20, 2019, Xcel Energy filed its Plan to Offer Generating Resources into the MISO Market on a Seasonal Basis, in Docket No. E-002/M-19-809. In this filing, Xcel Energy laid out its plan to offer the Allen S King Generating Station (King) and Unit 2 of the Sherburne County Generating Station (Sherco 2) into the MISO market on a seasonal basis. This plan calls for Xcel Energy to suspend normal operations during non-peak seasons at King as soon as March 2020, and at Sherco 2 as soon as September 2020. During these periods, Xcel Energy would operate only if required for reliability.

On July 15, 2020, the Commission issued its order approving Xcel Energy plan.[5] In its plan, Xcel Energy stated it intended to begin seasonal operations this fall.

This Xcel Energy docket is noticed for this Commission meeting so that Xcel Energy and potentially interested parties have an opportunity to provide an update on the implementation of the plan and for Commissioners to ask any questions they may have at this time about Xcel Energy's progress.

C. Public Comments

In July 2020, the Commission received approximately twelve comments from members of the public regarding Minnesota Power. All twelve comments were supportive of the Sierra Club, Fresh Energy and Department of Commerce efforts to investigate Minnesota Power's resistance to exploring the use of economic dispatch at its Boswell facility.

IV. Reports from the Utilities

A. Xcel Energy

On February 28, 2020, Xcel Energy submitted its report in compliance with the November 13, 2019 order. Xcel Energy's report covered its Allen King, Sherco 1, 2, and 3, Prairie Island 1 and 2, and Monticello plants. Xcel Energy has already committed to seasonal commitment at Allen King and Sherco 2. It alternates self-commitment and economic commitment at Sherco 1 and 2 while Sherco 2 is in-season. It does self-commit Sherco 3 due to that facility's status as a shared facility with Southern Minnesota Municipal Power Agency (SMMPA). Monticello and the two Prairie Island units are nuclear facilities with very different marginal cost profiles from the other (coal-fired) plants in its baseload analysis.

[5] ORDER APPROVING PLAN AND REQUIRING FILING, In the Matter of the Petition of Northern States Power Company for Approval of a Plan to Offer Generating Resources into the MISO Market on a Seasonal Basis, Docket No. E-002/M-19-809, and In the Matter of the Petition of Northern States Power Company for Approval of the 2020 Annual Fuel Forecast and Monthly Fuel Cost Charges, Docket No. E-002/AA-19-293 (July 15, 2020)

B. Otter Tail

On March 2, 2020, Otter Tail submitted its report in compliance with the November 13, 2019 order. Its report covered Big Stone and Coyote Station but excluded Hoot Lake because that facility is scheduled to close in Spring 2021.

Otter Tail did state that it self-commits one of Hoot Lake's two units in winter months to provide heat for the plant, while the other unit is offered economically, except when self-commitment is required for testing purposes.

Otter Tail self-schedules both Coyote and Big Stone as "must-run" units. Coyote Station is jointly owned by four utilities, one of which is in SPP and the other three in MISO. SPP and MISO do not coordinate commitment or dispatch. Since both markets treat shared plants as separate 'plants' for each owner, Coyote Station would be treated by MISO as three separate plants in line with the ownership shares of each utility (summing to 90% of the plant, SPP as a single plant of 10% of the capacity. Economic commitment is problematic because it is possible due to this separate treatment that MISO could commit part of the plant but not others (if the economic commitment price is on the margin, for example), and it is possible or even probable that SPP could commit its 10% of the plant while MISO does not, or vice-versa. This would leave the plant well below its minimum commitment threshold in many situations. As such, Otter Tail and its partners "self-schedule" the minimum commitment threshold and then economically commit above that threshold as routine practice at Coyote Station. Contractually, when one utility takes dispatch of its share of the plant, each of the others is contractually obligated to take dispatch of its own share. Because of the structure of the contract, it is rare that it makes sense to not operate the plant economically.

Otter Tail operates Big Stone similarly. It is joint owned with two other utilities, and though Otter Tail is majority owner, it is contractually obligated to dispatch in a similar manner as Coyote Station, above. Due to this complexity, both plants are usually self-committed.

Otter Tail also notes that MISO's single day dispatch process complicates offering these plants economically. If Otter Tail could be dispatched economically for multiple days in a row, it is more likely there would be times where economic dispatch might make sense. Start-up/shut-down costs are high enough that economic dispatch that lasts only one day (with non-dispatch on the surrounding days) is unlikely to be economic unless prices are quite high.

C. Minnesota Power

Minnesota Power (MP) submitted its compliance filing on March 2, 2020, covering its Boswell 3 and Boswell 4 generation facility, a 1GW baseload generation asset. Minnesota Power self-commits the Boswell facility routinely. Minnesota Power evaluated using economic dispatch or a seasonal operating schedule at Boswell 3 and Boswell 4, but rejected it due to replacement power supply, market risk, and regional reliability concerns. Boswell 1 and 2, which were retired in 2018, were excluded from analysis.

Minnesota Power did not provide a complete analysis of moving Boswell to economic commitment. Minnesota Power stated that it is too early in the investigative phase to report on conditions and solutions with certainty. Minnesota Power will continue to consider this topic in its Integrated Resource Plan, which was scheduled at the time of filing to be filed on October 1, 2020, but which has since been delayed until 2021. It will also file additional information in next year's filing in this docket.

Minnesota Power did raise a concern in its comments about a potential deficiency in the analysis required in this docket. It notes that, for periods when marginal cost (MC) is less than Locational Marginal Price (LMP), this analysis shows a loss for the utility in the amount LMP minus MC. In Minnesota Power's territory, however, Boswell is the only source of baseload power, and thus any additional needed power must be imported. In this situation, excluding Boswell from dispatch below the minimum, via scheduling Boswell at a minimum price above LMP (and thus not dispatching the plant) will result in a higher likely LMP than actually did occur with Boswell self-scheduled. This imposes a theoretical cost on Minnesota Power customers under economic commitment (the difference between the LMP with Boswell self-scheduled and theoretical LMP with Boswell economically scheduled) that would not be incurred under self-commitment. Thus, the 'loss' shown in this analysis for those hours overstates the actual cost to customers. Since this cost would be recovered via the purchased energy cost recovery process, this cost would be passed directly to customers even without a rate case.

Boswell is jointly owned with WPPI Energy, and thus any change from self-commitment to economic commitment would need to be coordinated between Minnesota Power and WPPI.

V. Parties' Comments

A. Sierra Club

On June 8, 2020, Sierra Club filed separate comments addressing Otter Tail and Minnesota Power's compliance filings.

Sierra Club engaged Synapse Energy Economics, Inc. (Synapse) to analyze the data filed by all three parties. Synapse provided expert services and analysis which was included in the Sierra Club analysis.

1. Sierra Club Analysis of Otter Tail's Report

Sierra Club found that Otter Tail's analysis was complete and adequate to meet the filing requirements. Sierra Club analyzed the data provided by Otter Tail and found that Otter Tail uneconomically self-scheduled both Big Stone and Coyote Station. Though Otter Tail has moved to sometimes economically committing Big Stone, but not Coyote Station. Sierra Club disputes part of Otter Tail's analysis which suggests that Coyote Station is operated economically, arguing that Otter Tail counts certain fuel costs as fixed when they should have been treated as variable costs. Otter Tail had classified these costs as fixed because they are required by the contract for fuel delivery to incur them. Sierra Club argues that the decision to enter into the contract with fixed fuel costs doesn't change the fact that fuel is a variable cost and should be treated as variable for this analysis. Sierra Club also argues that Otter Tail excluded certain predictive maintenance expenses as fixed which should have been treated as variable maintenance costs, which understated expenses. Sierra Club also argued that, by decreasing the minimum operating level for its plants, Otter Tail could have reduced variable costs and increased net revenues from operations.

Sierra Club notes that the Commission has moved fuel costs out of rate cases into the annual fuel clause adjustment dockets. Therefore, it would be appropriate for the Commission to address issues with self-commitment and self-scheduling in annual Fuel Clause Adjustment forecast filings and true-ups, for the purpose of evaluating the prudence of fuel expenditures.

Sierra Club's analysis also found that both Coyote Station and Big Stone incurred operating losses for ratepayers. Sierra Club believes that in the low current LMP environment, Otter Tail will likely incur even more extensive losses in 2020 at these stations.

Sierra Club found that Otter Tail could generate significant additional net revenue for customers by decreasing its minimum operating levels by half at Big Stone and Coyote Station. This could partly offset the losses Sierra Club identified at these two plants during periods of consecutive hourly losses between 2017 and 2019 long enough to allow for cool-down and warm-start up, above and beyond the variable costs of cool-down and start-up stated by Otter Tail. Sierra Club asserts that by using a forward-looking evaluation of self-commitment, Otter Tail could identify many of these periods in advance, economically commit during those periods, and save ratepayers money.

Sierra Club notes that, in response to Information Request 31 from the Sierra Club, Otter Tail acknowledged that it has worked out a plan with MISO for overcoming the issue Otter Tail identified with economic commitment of jointly owned plants, starting at Big Stone. This would call for joint partners to list the plant for economic commitment, and then update to self-commit status if any portion of the plant is scheduled for dispatch. This 'forces' MISO to dispatch the entire plant as a single unit. MISO has agreed to this plan, and on April 29, 2020, Big Stone was decommitted due to prevailing market conditions. Sierra Club encourages Otter Tail to apply this process throughout the year, rather than just during periods of low market prices.

Sierra Club also encourages Otter Tail to undertake the same discussions for its Coyote Station plant.

Sierra Club identified several times in Otter Tail's provided data, where Big Stone and Coyote were dispatched uneconomically at levels ABOVE the minimum operating level identified by Otter Tail and asks that Otter Tail clearly explain these events.

Sierra Club also questions Otter Tail's decision to exclude 'predictive maintenance' expenses from variable O&M costs. Otter Tail declares variable O&M expenses at both facilities which are a fraction of those Horizons Energy assigns to coal plants of their size in its Fall 2019 North American Market Database, and attributes much of that difference to the exclusion of predictive maintenance from variable costs. Excluding these costs as well as a fraction of Otter Tail's fuel costs which are, due to the terms of its fuel contract, deemed fixed by Otter Tail from the MISO offer curves, causes Otter Tail to offer these plants uneconomically, by understating the revenues needed to offset costs at those plants.

Sierra Club also questions Otter Tail's 2012 decision to enter into a 25-year fuel delivery contract for Coyote. It states that most coal facilities now enter into shorter term or spot contracts for fuel due to the uncertainty in the long-term status of coal generation in the context of climate change, and that many other utilities were concerned about forward-looking viability of the coal fleet by that time. Sierra Club thus questions whether the 25-year fuel contract in 2012 was prudent. When Sierra Club re-analyzed the Otter Tail data treating all Coyote Station fuel costs as variable, Sierra Club found that Coyote Station was being operated uneconomically, resulting in higher losses than declared by Otter Tail in its analysis.

Sierra Club notes that even in Otter Tail's analysis, most of the net revenues for both plants are earned in winter, and so Otter Tail should consider a seasonal schedule for both facilities, similar to the seasonal schedule proposed by Xcel Energy for King and Sherco 2. Sierra Club questions Otter Tail's assertion that both plants are needed for reliability and thus can't be used seasonally, noting that MISO Zone 1 has surplus capacity and is an exporting zone, and capacity prices in Zone 1 are very low. This, in Sierra Club's opinion, increases even higher the necessity for the utility to justify inclusion of these plants in its resource adequacy requirements. Sierra Club asserts that Otter Tail has failed to analyze the costs and benefits of meeting its resource adequacy requirements by other means, such as new generation assets or capacity purchases from lower-cost facilities.

Sierra Club also evaluated the minimum operating levels Otter Tail declared for both facilities and found that by cutting the minimum operating level in half, Otter Tail could generate significant additional benefits to ratepayers. Sierra Club suggests that Otter Tail evaluate its minimum operating levels at both plants to see if they can be reduced to benefit ratepayers. Sierra Club cites several examples where utilities have reduced minimum operating levels at plants, including one case where Otter Tail did so for Big Stone. Sierra Club notes that Otter Tail does evaluate these minimum operating levels, and that if they cannot be cut further, Otter Tail should evaluate other sources of capacity rather than operating these plants unprofitably at minimum operating levels.

2. Sierra Club Recommendations for Otter Tail

1. Move Big Stone and Coyote from self-schedule to economic dispatch to save customers money in all seasons, not just during low-price seasons.
2. In the absence of multi-day commitment markets at MISO, the Commission should require Otter Tail to establish a clear and auditable mechanism of determining whether its commitment decisions are in the best interests of ratepayers.
3. The Commission should indicate that in the next Fuel Clause Adjustment True-up proceeding, it will disallow the uneconomic portion of fuel costs during periods in which any utility commits and dispatches a coal plant uneconomically in a manner that is not supported by the forward-looking analyses described above.

4. The Commission should use a two-step approach for addressing Otter Tail's 25-year coal supply contract for Coyote.
   a) First, the Commission should order Otter Tail to evaluate whether continued participation is in customers' interest in its next IRP.
   b) Second, because the Commission has never reviewed the prudence of the contract, any imprudent associated costs should be disallowable.
5. The Commission should require utilities to identify any proposed new coal contracts in Fuel Clause Adjustment proceedings, and to submit them for prudence review in those proceedings before signing any such contracts.
6. If Otter Tail continues to identify co-ownership as a barrier to moving Coyote to economic dispatch, the Commission should require Otter Tail to justify the prudence of continued operation of the unit as a joint owner in its next IRP.
7. Otter Tail should also consider reducing minimum operating levels at Big Stone and Coyote.
8. The Commission should require Otter Tail to evaluate alternate ways of meeting its resource adequacy requirements in its next IRP.

3. Sierra Club Analysis of Minnesota Power's Report

Sierra Club found that Minnesota Power failed to analyze the costs and benefits of moving Boswell 3 and 4 to economic commitment and did not analyze the potential to move the units to seasonal operations. As such it has failed to meet the filing requirements presented by the Commission. Sierra Club cites Ordering Paragraph 8 in the November 13, 2019 Order, where the Commission:

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

In response, Minnesota Power stated:

> Minnesota Power has initiated an investigation into the alternatives for economic dispatch to determine the potential operating conditions that exist at each Boswell unit and to identify potential solutions. At this time, it is too early in the investigative phase to report on conditions and potential solutions with any certainty. Minnesota Power will continue to consider this topic in its Integrated Resource Plan which will be filed on October 1, 2020 (sic) and next year's Self-Commitment filing.

Sierra Club describes this action as 'punting' its compliance to the IRP or subsequent self-commitment dockets.

Sierra Club also requested that Minnesota Power provide information on lead time to bring units online, how the company evaluates whether and when the amount of forecasted energy market losses resulting from self-commitment outweigh the costs of damages due to starts and stops, costs incurred each time the unit shuts down and restarts, and whether the company performs economic analyses to inform its unit commitment decisions, to which Minnesota Power responded that it is "too early in the investigative phase to report" on this information. The utility responded similarly to a question as to whether it had conducted an analysis of switching to seasonal operations and rejected a question regarding modification of minimum operating levels as "outside the scope" of this investigation. Sierra Club's own analysis suggests that decommitting Boswell 3 and 4 during low-price seasons could offer savings to customers. Sierra Club rejects Minnesota Power's assertion that capacity requirements and need for reliability and ancillary services are a barrier to moving to seasonal operations, as Minnesota Power neither adequately substantiated those barriers, nor did it analyze whether it could receive those benefits more cost-effectively from other sources.

Sierra Club notes that there were extended periods where Boswell was operated either uneconomically or at a marginal level of net revenue, which would justify switching to an economic commitment or seasonal commitment of these facilities in response to low prices. Using those fuel costs, Sierra Club identified several periods where Minnesota Power could have increased net revenues by not self-committing for periods longer than the cool-down and warm-up period of the Boswell facilities. Since Minnesota Power was unable to provide Sierra Club with total start-up and cool-down costs, it used the start-up and cool-down fuel costs in its analysis and acknowledges this could understate actual cool-down and warm-up costs and thus this figure could be inflated. On the other hand, Sierra Club notes that Minnesota Power's decision to exclude predictive maintenance from variable costs in its offer curves results in Minnesota Power overstating net revenues from plant operations.

Sierra Club asserts that Minnesota Power does not appear to regularly review whether its Boswell operations are maximizing benefits to customers, contrary to Minnesota Power's assertions. Sierra Club notes that the information that Minnesota Power was unable to provide during this docket, listed above, would be necessary to do an adequate review of operations, and thus the fact that it could not provide them is highly suggestive that Minnesota Power is NOT actually regularly reviewing whether its operations are maximizing benefits to customers.

Though it is reasonable for a utility to sometimes be wrong in its forecasts and decisions, it is unreasonable in Sierra Club's view for a utility to have the tools to inform its decisions, such as a forward looking analysis, and not use it and instead make uninformed decisions which create losses which ratepayers pay for.

Sierra Club also found that Minnesota Power understated costs by excluding predictive maintenance expenses from its variable costs. This results in its yield curves including O&M costs which are a fraction of those assigned by Horizons Energy to coal plants of the size of

Boswell's units in its Fall 2019 North American Market Database.[6] This biases the market in favor of commitment and dispatch even at times when it is economically inappropriate to do so.

Sierra Club also asserts based on its analysis that by cutting the minimum operating level in half, Minnesota Power could increase net revenues significantly.

Sierra Club also asserts that Minnesota Power has failed to demonstrate that Boswell is its lowest-cost operation for meeting resource adequacy requirements and for obtaining its reliability and ancillary services, and has not conducted a robust analysis exploring the costs and benefits of meeting these obligations through other means.

4. Sierra Club Recommendations for Minnesota Power

1. The Commission should find that Minnesota Power did not comply with its November 13, 2019 Order.
2. In the absence of a multi-day commitment market at MISO, the Commission should require Minnesota Power to establish a clear and auditable mechanism of determining whether its commitment decisions are in the best interests of ratepayers, or else require Minnesota Power to use MISO's economic commitment status for both Boswell 3 and Boswell 4.
3. The Commission should indicate that in Minnesota Power's next Fuel Clause Adjustment True-Up proceeding, it will disallow Minnesota Power's recovery from ratepayers any fuel and variable operations and maintenance (O&M) costs incurred as a result of Minnesota Power's uneconomic dispatch of Boswell 3 and 4, where not supported by a forward-looking analysis identifying extending periods of low prices where it would be net-revenue enhancing to cool-down and start-up the plant rather than running it.
4. The Commission should require Minnesota Power to evaluate, in its upcoming IRP, whether there are lower cost alternatives for meeting its resource adequacy requirements, and for obtaining reliability and ancillary services.
5. In its next IRP, Minnesota Power should be required to analyze whether reducing the minimum operating levels at Boswell 3 and Boswell 4 would benefit customers.
6. The Commission should require utilities to identify any proposed new coal contracts in Fuel Clause Adjustment proceedings, and to submit them for prudence review in those proceedings, before signing any such contracts. It should also signal that it will not allow utilities to recover from ratepayers any future costs associated with new fuel coal contracts that include fixed cost terms of service, or take or pay or liquidated damages provisions. The Commission should also indicate that any fuel contracts that contractually prohibit disclosure of the contracts' terms without Commission order is per se counter to the public interest.

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[6] Sierra Club comments of June 8, 2020, Page 19.

B. Department of Commerce Comments of June 8

The Department of Commerce provided a thorough review of the record and the MISO energy markets. The Department also analyzed operations at each of the facilities discussed by Otter Tail, Minnesota Power, and Xcel Energy in its filings.

1. Department Analysis of Minnesota Power's Report

The Department notes that Minnesota Power provided responses to its information requests similar to those provided to Sierra Club, that is, citing the early state of its investigation to not answer certain questions. The Department also notes that Minnesota Power failed to provide information responsive to the information request and looks forward to reviewing the results of Minnesota's study of dispatch and commitment alternatives for Boswell 3 and Boswell 4. In the absence of such information on cool-down and warm-up costs and times, the Department chose to analyze Minnesota Power's operations based on potential one-week long periods to evaluate self-commitment. The Department found that benefits of operations were at or below zero for many one-week periods during 2019, and thus a more detailed consideration of the overall costs and benefits of economic or seasonal dispatch at Boswell 3 and 4 is warranted. The Department recommends that the Commission require such an analysis.

2. Department Analysis of Otter Tail's Report

The Department notes that Otter Tail included ancillary services revenues in its analysis, unlike the other two utilities, and recommends that the Commission clarify whether ancillary services should be included in overall calculation of hourly net cost or benefit in future filings. Otter Tail also did not break down unit cost between fuel and variable O&M in its filing. The Department recommends that the Commission decide whether a breakdown of costs into Fuel cost and O&M variable cost is necessary, or if this combined variable cost is adequate. The Department notes that the combined cost was adequate for its own analysis.

The Department analysis finds that Big Stone operated at a loss over 30% of the time for all but two months, strongly suggesting that customers would benefit from a more detailed examination of whether Big Stone should be operated on a seasonal or economic-commitment basis. The Department found that Coyote Station operated at a loss over 30% of the time during only a few months, and so such an analysis for that facility is not called for.

3. Department Analysis of Xcel Energy's Report

The Department analysis of Prairie Island and Monticello found that both facilities operated at a net benefit to customers over 90% of the time. As such, the Department concluded that a more detailed analysis of the nuclear units is not needed.

The Department analysis of the coal plants found that over 30% of hours are operated at net cost in most months at King, and all three Sherco units. The Department thus pursued a more detailed analysis of these facilities. The Department did note that the move to a seasonal dispatch of King and Sherco 2, and economic commitment of the other Sherco facilities during 2019 has improved the cost situation at those plants.

4. Department Recommendation

The Department made the following recommendations:

RECOMMENDATION FOR COMPLIANCE FILING

To remedy various differences still present in the calculations and data reporting, the Department recommends that the Commission require the utilities to file a compliance filing within 60 days of the Commission's order containing an Excel spreadsheet of the required data, with formulas intact, that the utilities will fill out for each unit in future filings, including clear definitions of the inputs. As part of developing this spreadsheet, the Department recommends that the Commission determine if:

1. a breakdown into unit fuel cost and unit variable O&M cost is necessary or if only a total variable cost is necessary;
2. ancillary services revenues should be included in the overall calculation of hourly net benefit / (cost); and
3. data regarding unavoidable self-commitment should be added to the utilities' filings in the future.

RECOMMENDATIONS FOR NEXT YEAR'S FILINGS

Regarding Minnesota Power, the Department recommends that the Commission require Minnesota Power to provide an analysis of the overall benefits and costs of alternatives, such as economic or seasonal dispatch, at Boswell unit 3 and Boswell unit 4 in the Company's next annual filing in this proceeding.

Regarding Otter Tail, the Department recommends that the Commission require Otter Tail to provide an analysis of the overall benefits and costs of alternatives, such as economic or seasonal dispatch, at Big Stone in the Company's next annual filing in this proceeding.

Regarding Xcel Energy, the Department recommends that the Commission require Xcel Energy to provide an analysis of the overall benefits and costs of alternatives, such as economic or seasonal dispatch, at Sherco unit 1 and Sherco unit 3 but in the Company's next annual filing in this proceeding. [7]

[7] Department Comments of June 8, 2020, p. 40.

C. Fresh Energy

Fresh Energy noted Xcel Energy's proposal to move Sherco 2 and King to seasonal commitment and Otter Tail's work to move Big Stone to Economic Commitment, which occurred in April 2020. Fresh Energy cites these moves as proof that coal plants can move to economic commitment and that such a move has a huge cost saving potential for customers, as well as significantly reducing emissions.

Fresh Energy notes that these compliance filings are significantly more robust than the reporting in Dockets 17-492 and 18-373, and thanks Otter Tail and Xcel Energy for their work over the past year. Fresh Energy notes, however, that Minnesota Power failed to evaluate the potential costs and benefits of alternative operational strategies, even though they were required to do so by Ordering Paragraph 8. Fresh Energy sees no reason that Minnesota Power shouldn't follow Xcel Energy and Otter Tail in switching to an economic commitment strategy, and believes Minnesota Power provided no reasonable basis for why an economic-commitment strategy wouldn't work at Boswell similarly to how they are already working at Sherco 1 and Big Stone.

Fresh Energy questions Minnesota Power's assertion that "Self-commitment status combined with allowing MISO to dispatch the Boswell facility economically between its minimum and maximum capability is currently the least cost strategy for Minnesota Power customers as demonstrated by the evaluation contained in this filing." [8] Fresh Energy questions how Minnesota Power can justify this assertion without conducting the analysis, required in this docket, of economic commitment as an alternative to self-commit. Fresh Energy rejects the arguments Minnesota Power makes to justify self-commit on resource adequacy, replacement power and market risk, and reliability services. Fresh Energy notes that economic commitment does meet the "must offer" requirement for resource adequacy, so that alone cannot justify self-commit. Market risks and regional capacity issues would also be met under economic commitment, though would need to be accounted for in a seasonal commitment plan. Further, if committed economically, the plant would be available when market prices are above costs, and so price exposure risks to ratepayers would be minimal.

Fresh Energy argues that under economic commitment status, Boswell would be available to meet MISO's reliability needs if issues arose, and so rejects that argument from Minnesota Power as well.

Fresh Energy notes that the utilities only include some variable costs in their offer curves, so a fair analysis of the net revenue from generation should include all variable costs, not just those included in its MISO offer curves. Fresh cites several categories of costs which are treated as 'fixed' but would actually vary at a high level with higher or lower usage levels for a facility. Fresh Energy is thus recommending tweaking the language of Ordering Paragraph 9 of the November 2019 order to include all variable costs, not just those included in the MISO offer curve.

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[8] Minnesota Power, Annual Compliance Filing of March 2,2020, page 5.

For Minnesota Power, Fresh Energy's analysis found several significant periods of losses at both units, including several months with what it described as negative or extremely low revenue. Similarly, Fresh Energy finds several months with negative or extremely low revenue at Big Stone for Otter Tail and applauds Otter Tail for moving Big Stone to an economic commitment strategy, noting that it should bring significant customer benefits. Fresh Energy notes that Coyote had many months of low or negative net revenue when all fuel costs were accounted for, and that there were even some when half of fuel costs were excluded, as Otter Tail did due to its fuel contract. Fresh Energy thinks Otter Tail should re-examine that contract and its options for economic commitment at Coyote Station despite this limitation and the limitations imposed by joint ownership.

Fresh Energy evaluated the net revenue analysis and PLEXOS modeling provided by Xcel Energy for its plants, provided in this docket and in Docket 19-809 relating to the Seasonal Commitment Plan for Sherco 2 and King. Fresh Energy applauds Xcel Energy for identifying, proposing, and implementing operational changes at its plants in a relatively short time period, including economic commitment for Sherco 1 and 2, and seasonal commitment of Sherco 2 and King. Fresh Energy encourages Xcel Energy to work with its partner at Sherco 3 to bring similar changes to operations there and sees significant customer benefits to doing so.

1. Fresh Energy – Initial Recommendation:

1. Minnesota Power should provide a plan in this docket for moving one or more Boswell units to an economic commitment-based strategy by September 1, 2020.

2. In subsequent compliance filings, require Otter Tail to provide: a) an analysis of shifting to an economic commitment-based strategy at Coyote Station with the current coal contract, b) a discussion of the options and the costs of changing the Coyote Station contract, and c) an evaluation of how potential costs of changing the contract compare to Coyote's past and forecast operating losses.

3. In subsequent compliance filings, require Xcel Energy to evaluate the financial costs and benefits of moving Sherco 3 to economic commitment.

4. Update Ordering Paragraph 9 of the Commission's November 13, 2019 Order to read: The Commission will open an investigation in a separate docket and require Minnesota Power, Otter Tail, and Xcel Energy to report their future self-commitment and self-scheduling analyses using a consistent methodology by including all production costs including fuel, ~~cost~~ variable O&M ~~costs, matching the offer curve submitted to MISO energy markets,~~ and any other variable costs associated with the plant.

2. Fresh Energy – Reply Comments Recommendation

Fresh Energy also recommends the Commission:

1. Require Xcel Energy, Otter Tail and Minnesota Power to file a compliance filing within 30 days of the Commission's order containing an Excel spreadsheet of the required data, with

formulas intact, that the utilities will fill out for each unit in future filings, including clear definitions of the inputs. This compliance filing and future Annual Reports in this docket should:

a. Report net benefit / (cost) using total production cost but provide columns for hourly unit fuel and variable O&M in workpapers.
b. Not include ancillary service market (ASM) revenues in the calculation of net benefit / (cost), but utilities may report ASM revenues and discuss their relevance to the analysis.
c. Include data for "unavoidable must run hours" in future reports and data sets and identify these hours and the reason for "unavoidable self-commitment" in workpapers.

2. Require Xcel Energy, Otter Tail and Minnesota Power to provide in future Annual Reports in this docket:

a. Length of minimum decommit time for each unit
b. Number of times in the analysis period that each unit incurred losses over a duration greater than or equal to its minimum decommit time
c. Of the periods identified in (b), the number of periods when losses were greater than the relevant startup cost (warm or cold startup cost, depending on length of the period)
d. Sum of losses in excess of startup cost that were incurred during periods identified in (c)

3. Require an analysis of the relative cost/benefit of alternative commitment and dispatch strategies, such as economic or seasonal dispatch, for the following units as part of the 2021 Annual Reports in this docket: a. Otter Tail: Coyote Station, evaluated under two scenarios: using current variable fuel costs and using all fuel costs as variable. b. Xcel Energy: Sherco 3

4. Require Otter Tail to include in the 2021 Annual Report in this docket a discussion of the options and potential costs of changing the Coyote Creek Mike contract to reduce or eliminate fixed fuel costs.

5. Require Xcel Energy to include in the 2021 Annual Report in this docket a discussion of the potential revenue impacts to the steam contract at Sherco 3 from moving to economic 10 commitment, and potential solutions for coordinating commitment and dispatch decisions between Xcel Energy and SMMPA.

6. If Minnesota Power does not adjust the commitment strategy of either Boswell unit for the fall 2020 season, require Minnesota Power to report on losses in excess of startup cost incurred during periods greater than or equal to minimum decommit time from September 1, 2020 – December 31, 2020 for each Boswell unit. This accounting should be included in the 2021 Annual Report in this docket as well as Minnesota Power's 2021 fuel charge true up request.

7. Review Boswell's losses in excess of startup cost during Minnesota Power's 2021 fuel charge true-up proceeding and, if the Commission finds these losses to be unreasonable, determine whether to allow recovery and whether to adjust proposed FCA true-up amounts accordingly.

D. Otter Tail - Reply Comments

Otter Tail provided reply comments addressing both the comments provided by parties and the additional questions provided by the Commission in its Topics Open for Comment. Party responses to the questions Open for Comment will be addressed separately below.

In response to parties' comments, Otter Tail addresses the Department's question regarding dispatch above the minimum even when not economic. Otter Tail notes that MISO determines dispatch above the offer curve based on the cost information provided by the generators, and Otter Tail never seeks to dictate to MISO appropriate economic offer dispatch. Costs may exceed LMP revenues due to MISO dispatch because of reliability dispatch (costs covered by make-whole reliability payments that weren't considered here), because MISO dispatch above minimum doesn't include startup or no-load costs, and in Otter Tail's case because of the multiple-owner issue described above. Otter Tail also cites physical limitation which might cause the plant to continue dispatching above the minimum after prices have fallen, as banking back may be costlier than continuing for short periods, and ramp rate may simply be slower than volatile price changes. Otter Tail does recommend including ancillary services revenues in the analysis, since they are part of the revenues the utility receives for dispatch, and offset some of the difference between LMP and variable costs that make it appear that the generator is losing money while generating above minimum. Otter Tail notes that ancillary services exceed energy payments on a per MWh basis in some situations.
Otter Tail opposes a requirement to provide data on unavoidable self-commitment. Identifying when a self-commitment is 'unavoidable' is difficult.

In response to the Department's recommendation that Otter Tail provide an analysis of alternatives at Big Stone, Otter Tail notes that it has already begun economic commitment at Big Stone. Seasonal Dispatch at Big Stone is not viable, as a seasonally committed plant would not count toward its requirement to maintain sufficient generation capacity to serve load due to MISO rules. Big Stone and Coyote Station provide about half of the generation resources Otter Tail uses to meet it MISO capacity requirements. Since it would be impossible to move to seasonal dispatch, Otter Tail does not believe an analysis of seasonal dispatch at Big Stone and Coyote Station would be necessary. Otter Tail does note that the switch to economic dispatch at Big Stone in April 2020 will be reflected in its next filing.

In response to the Fresh Energy tweak to the language of Ordering Paragraph 9, Otter Tail urges that the Commission keep this analysis consistent with MISO practice. MISO is responsible for resource adequacy and operation of the regional market.

In response to the Fresh Energy recommendation that Otter Tail analyze shifting to economic commitment at Coyote Station and changes to the fuel contract, Otter Tail argues that this is beyond the scope of this investigation, but that Otter Tail will continue discussions with its co-owners to evaluate economic commitment at Coyote Station.

In response to the Sierra Club recommendations on economic commitment at Big Stone and Coyote Station, Otter Tail reiterates that commitment at those plants is not solely Otter Tail's decision and notes its work to coordinate with its co-owners to advance economic commitment at those plants. Otter Tail notes that self-commitment isn't limited to testing, but also includes safety concerns around fuel storage, operational integrity of the plant.

Otter Tail also noted a potentially misleading statistic in Sierra Club's comments on Page 21, where Sierra Club cited EIA Form 923 Fuel Receipts for Coyote Station and clarified that Otter Tail's share of those receipts would be 35%.

Otter Tail also believes that Sierra Club's proposal to require 'clear and auditable' mechanism of determining whether its commitment decisions are in the best interest of rate payers, and a requirement that Otter Tail track and maintain for review its forward looking analysis of unit commitment strategies is beyond the scope of this investigation and unreasonable. Otter Tail notes that forecasting LMPs is very difficult and varies from hour-to-hour, and that Otter Tail would have no advance knowledge of many of those factors. Other requirements listed already are part of the commitment process, and some self-schedule events are outside of Otter Tail's ability to control, and so an enforcement mechanism would be unreasonable. Otter Tail states that it is already working in the best interest of ratepayers within the limitations imposed by its' facilities' ownership status and MISO rules, and use qualitative methods to optimize economic and operational plant performance that would be difficult to express in 'clear and auditable' mechanisms. Otter Tail endorses a multi-day market commitment mechanism at MISO and encourages the Commission to exert its influence through the Organization of MISO states to advance that goal.

In response to Sierra Club's recommendation that uneconomic portions of fuel costs lbe disallowed, and specifying a methodology for evaluating reasonableness of dispatch, Otter Tail argues that this idea is beyond the scope of this investigation, ignores the ISO role in dispatch and resource adequacy, ignores the complexities of multiple-owner generation, and vastly oversimplifies the complexity of regional markets and the multi-state footprints over which utilities operate. Otter Tail argues that it continues to evaluate opportunities to operate its plants efficiently and economically in a complex commercial and regulatory environment.

In response to the two-step evaluation of its 25-year contract proposed by Sierra Club and the requirement of Commission review of fuel contracts in the fuel clause adjustment process, Otter Tail argues that such a process is well-beyond the scope of this proceeding. Otter Tail is unaware of any rule, statute, or Commission practice which would support pre-screening of fuel contracts for prudency, and notes that it is not the sole decision maker on altering the existing contract. Otter Tail notes that Coyote Station is sited at the mine, and so the decision making around a long-term fuel contract there is going to be different from decision making at a generic coal plant with potentially multiple sources of supply remote from the plant. Mine-siting saves money by reducing freight costs, and the long-term contract is the price of such lower costs.

In response to suggestion by Sierra Club that the Commission require Otter Tail to justify prudence of continued operation as a joint owner, Otter Tail notes that this is well beyond the scope of the proceeding.

In response to the Sierra Club recommendation that Otter Tail consider reducing minimum operating levels, Otter Tail notes that minimum operating levels are largely determined by engineering factors, not economic ones. Otter Tail has lowered minimum operating levels in the past in response to changes in engineering needs but does not believe it is safe or prudent to revisit those levels in response to economic issues.

In response to the Sierra Club recommendation that the Commission require Otter Tail to evaluate alternate sources of resource adequacy in its next IRP, Otter Tail argues that this request seeks information on prudency and resource planning which is beyond the scope of this Docket.

E. Xcel Energy – Reply Comments

Xcel Energy replied to the Department of Commerce and to Fresh Energy.

In response to the Department of Commerce question about dispatch above the minimum when non-economic, Xcel Energy noted that ancillary services, testing and required self-commitment which should be removed from analysis, and a holistic evaluation of generation unit economics should be considered. Xcel Energy notes that total revenues greatly exceed variable costs for the entire period. MISO uses a 24-hour optimization window, with hourly day-ahead awards, 5-minute dispatch instructions, and 4 second regulating reserve instructions. MISO evaluates dispatch and commitment on the standard of a full operating day, so there will be many-hour long periods of non-economic dispatch due simply to operational needs at MISO. The reporting was hourly, but that doesn't take into account the actual decision-making process. The analysis here also didn't include 'make whole' payments from MISO for ancillary services, which skews the analysis at the hourly level.

Xcel Energy takes issue with Fresh Energy including its fixed O&M costs in its analysis. Fixed O&M is, fixed, and so isn't included in the MISO offer curves, which are purely variable cost based. MISO is designed to incent suppliers to offer at marginal cost, in line with what a competitive marketplace would do. Marginal costs do not include fixed costs, because a marginal cost will only include costs which change in response to the decision being made, in this case on an hourly or daily basis. These fixed costs are appropriate in evaluation of a unit for retirement or accreditation as capacity, however. Xcel Energy has conducted that analysis in its IRP and has proposed retirement of the coal fleet by 2030. That is the appropriate scope of analysis for fixed costs, not day-to-day dispatch decisions.

In response to Fresh Energy's proposal to tweak the language of Ordering Paragraph 9, Xcel Energy notes that it provided the data in separate columns and so satisfied Fresh Energy's goal in its filing. Using the offer curve is considerably less burdensome than evaluating all production costs de novo, and better reflects the actual decision scope for commitment. Xcel Energy does not believe changing the language is needed at this time and believes the Department's recommendation regarding standardization of reporting in a live Excel spreadsheet would meet Fresh Energy's needs on this point.

In response to the Department recommendation for a more consistent data filing mechanism, Xcel Energy does not object.

F. Minnesota Power - Reply Comments

In response to the phenomenon of uneconomic dispatch identified by the Department, Minnesota Power identifies two reasons. First is participation in the Ancillary Services market, which generates about $1 million for Minnesota Power for the period, and second, incremental offer curves are based on estimated costs of fuel, while the compliance filing included actual costs, which might have resulted in occasional uneconomic dispatch.

In response to questions regarding the adequacy of its filing, Minnesota Power committed in its IRP docket to file on December 1, 2020 an interim report on the operating requirements and impacts of using economic dispatch at each Boswell unit given impacts of the COVID-19 pandemic on the grid and MISO Energy Market, subject to Commission approval.

G. Commercial Customers – Response Comments

The Commercial Customers submitted a response to the Commission's June 10 notice for comments and in their conclusion stated

> The Commercial Customers with Clean Energy Goals believes the overuse of self-commitment dispatch is a barrier to the State's and our clean energy, energy affordability, and energy equity goals. The practice is also creating an artificial obstacle to new clean energy development, development that is needed for Minnesota to meet its GHG emissions goals. The record demonstrates that reducing the use of self-commitment does not pose a risk to electric reliability to the system or to our own operations. We urge the Commission to order dispatch changes to the units included in this investigation and move with speed to implement those changes so our organizations and all ratepayers can benefit from lower cost electricity. [footnote omitted]

VI.Responses to the June 10 Notice for Comment

1. Are the March 1, 2020 filings by the utilities adequate?

The Department recommends that the Commission determine that the filings by the utilities are adequate. As discussed in the Department's comments, refinements and improvements can be made in future filings, however the possibility of improvement does not render the starting point inadequate.

Otter Tail believes its filings in this docket are adequate, and questions whether Sierra Club and Fresh Energy are trying to expand the scope of this docket to include a prudency and resource-planning review which greatly exceed the scope and intent of this docket.

Fresh Energy is satisfied with the filings by Otter Tail and Xcel Energy, but agrees with the Department that more clarity and comparability across reporting years and utilities would be useful. Fresh Energy supports the Department recommendation regarding an Excel spreadsheet filed within 30 days of the order.

Fresh Energy recommends that the 30-day compliance filings and future Annual reports include net benefit/(cost) using total production cost and include both unit fuel cost and unit variable O&M costs in workpapers. Ancillary Services revenues shouldn't be required in this filing, but utilities should be free to report ASM revenues and discuss their relevance as appropriate. Utilities should include data for "unavoidable must run hours", which only Xcel Energy excluded. Utilities should identify such hours in their reports, including the reasons in workpapers.

Sierra Club recommends that Minnesota Power's and Otter Tail's filings be found to not adequately demonstrate that its commitment and dispatch practices are minimizing costs and maximizing benefits.

Commercial Customers offer no opinion on the adequacy of the filings.

2. **What conclusions can be drawn from the data filed by the utilities on March 1, 2020 in conjunctions with what has been learned earlier in this investigation?**

The Department believes the Commission can draw conclusions regarding dispatch decisions for the July 1, 2018 to December 31, 2019 duration, and the data provides an adequate basis for the Commission to make determinations regarding how to improve utilities' dispatch decisions in the future. The data are not adequate for unit retirement decisions.

Fresh Energy finds that there is clear evidence in this record that customers could pay less for electricity if coal units use self-commitment. Fresh Energy, Sierra Club, and the Department all found that self-committed units operate at a loss for significant portions of the year, and that periods of sustained losses could be avoided or minimized with a different unit commitment strategy. All three intervenors found that there were extended periods during which self-committed units generated significant negative net revenues, using different methods to reach basically the same result – 1/3 or more of the time, Boswell 3, Boswell 4, Big Stone, Coyote Station, and Sherco 3 were operating at a loss to ratepayers in amounts measuring up to millions of dollars in some cases. Fresh Energy finds that the barriers identified by the utilities to using economic commitment are not insurmountable, and that economic commitment is becoming a best practice in Minnesota.

Sierra Club concludes that Minnesota Power did not analyze costs and benefits of moving Boswell 3 and 4 to economic commitment, nor did it analyze costs and benefits of moving Boswell 3 and 4 to seasonal commitment. During the reporting period, Minnesota Power frequently uneconomically self-committed Boswell 3 and 4, through their policy of 100% self-commitment of those facilities. Similarly, Otter Tail frequently uneconomically self-committed Big Stone and Coyote Station. Minnesota Power and Otter Tail have incurred significant sustained losses due to this failure to use a forward-looking analysis. Further, omitting certain variable predictive maintenance costs means that both utilities' analysis understated the losses and the extended periods during which losses were incurred. In all, both utilities could generate millions of dollars in benefits by operating on an economic commitment basis at their respective facilities.

Sierra Club concludes that Otter Tail's designation of certain fuel costs as fixed causes it to understate the costs and thus losses to ratepayers of continuing to use self-commitment at Coyote Station.

Sierra Club also concludes that Minnesota Power and Otter Tail could generate significant additional revenue for customers by reducing minimum operating level at its facilities.

Otter Tail draws the following conclusions:

a. Market prices, which dictate what a unit is paid, can vary the results of this analysis from year to year.
b. Over the eighteen-month reporting period, aggregate revenues have exceeded the fuel costs attributable to operating these plants during periods of self-schedule and self-commitment.

Commercial Customers (Consumers with Clean Energy Goals) notes that self-commitment can potentially lead to curtailment not just of low-cost renewable generation in Minnesota, but also renewable generation outside the state from independent power producers and can reduce construction of new facilities. Consumers thus recommend that the Commission not draw inferences on the effect of self-commitment on renewables simply from Minnesota utility data on existing facilities.

3. How should the Commission use the information provided by the utilities in this docket going forward?

The Department recommends that the Commission use the information and analysis conducted in this proceeding to refine the information requirements for future filings and to order more detailed analysis of the economic dispatch by the utilities in the 2021 filings. The knowledge of MISO market dispatch processes that is provided in the submittals in this proceeding serve as useful background information to consider in resource planning and resource acquisition proceedings.

Otter Tail believes the Commission should use the information in this docket to inform its participation in the Organization of MISO States, thereby contributing to an even more efficient MISO market that may, in time, facilitate multi-day commitments.

Fresh Energy recommends continuing to collect this data annually. Continued annual reporting will help identify continuing opportunities to use economic commitment under various economic conditions and will help track the benefits and opportunities for improvement for those units using economic commitment all or some of the time.   Fresh Energy endorses the Sierra Club methodology for calculating periods of net negative revenues, as it is based on a real engineering and economic constraint – the time needed to cool down and warm back up the plant for generation.   As such, Fresh Energy recommends the following additions to future compliance reports:

a. Length of minimum decommit time for each unit

b. Number of times during the analysis period that each unit incurred losses over a duration greater than or equal to its minimum decommit time
c. Of the periods identified in (b), 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.
d. Sum of losses in excess of startup cost that were incurred during periods identified in (c).

Sierra Club recommends that new coal contracts be identified to the Commission and reviewed for prudence during a fuel clause adjustment proceeding before signing any such contracts. Sierra Club also recommends that Otter Tail's existing coal contract for the Coyote station be evaluated by Otter Tail as to whether it is in customers interest in its next Integrated Resource Plan. The Commission should consider disallowing imprudently incurred fuel costs related to the existing contract during the next fuel clause adjustment proceeding. One approach would be to disallow the difference between fuel and variable O&M costs and Market prices during the hours Coyote Station is operating and those costs exceed market prices.

Sierra Club also recommends that both utilities re-evaluate their options for resource adequacy and reliability and ancillary services at its next IRP. Also, both utilities should evaluate the minimum operating levels at each facility at its next IRP.

Commercial Customers recommend that the Commission require all new or repowered generation be economically dispatched, unless the utility can demonstrate that doing so would not be in the best interest of customers and in support of the State's clean energy and climate goals. Any existing units on self-commitment not covered by this investigation should also be evaluated for economic dispatch.

4. Should the Commission require the utilities to evaluate any specific facilities for economic commitment?

The Department recommends that Boswell 3, Boswell 4, Big Stone, Sherco 1, and Sherco 3 be studied for economic and/or seasonal commitment.

Otter Tail does not believe the Commission should require utilities to evaluate specific facilities for economic commitment. MISO has primacy for ensuring regional resource adequacy, and Otter Tail and its plant co-owners continually evaluate the best and most efficient use of their plants and make business decisions based on the best information available, including the decision to take Big Stone to economic commitment in April 2020, following routine evaluation.

Fresh Energy recommends that Coyote Station and Sherco 3 be evaluated for economic commitment. Fresh Energy specifically recommends that Otter Tail be required to evaluate economic commitment at Coyote Station for the scenario where all fuel costs are variable as well as using the current contract-driven split of fixed and variable fuel costs, and present its findings in the 2021 reporting in this docket. Fresh Energy understands the contract impediment to actually implementing full variable fuel cost, but still believes it is valuable to undertake the analysis in that it would provide information for future reevaluation of the contract. Fresh Energy continues to recommend that Otter Tail discuss the options and costs of changing the contract in their next annual report.

Fresh Energy notes that Sherco 3 is the only Xcel Energy plant still fully on self-commitment. Fresh Energy continues to recommend that the Commission require Xcel Energy to evaluate the financial costs and benefits of moving Sherco 3 to economic commitment in its next annual report, which Xcel Energy has agreed to. Fresh Energy also recommends that Xcel Energy discuss with its partner at Sherco 3 the conditions and process for switching this facility to economic commitment and identify potential solutions for coordination of commitment and dispatch in the next annual report in this docket.

Sierra Club understands that Minnesota Power was supposed to already evaluate Boswell 3 and 4 for economic commitment in this proceeding and failed to do so. Similarly, Otter Tail was supposed to evaluate Big Stone and Coyote Station for economic commitment in this docket.

Commercial Customers believe that Boswell 3 and 4, and Sherco 1 and 3 should be evaluated for economic commitment. Finding that a plant has historically earned more revenue than costs over certain time periods is not adequate to determine that self-commitment is appropriate. Instead, the dispatch method that results in lowest cost to ratepayers should be chosen. The record shows that these units are ripe for economic dispatch evaluation. Consumers urge that the Commission move with due speed based on the information in this proceeding, because the longer units are operated uneconomically, the longer customers are being overcharged.

5. Should the Commission establish enforcement procedures for this issue?

The Department is not aware of any enforcement issues that cannot be addressed through the Commission’s normal, written orders.

Otter Tail opposes creating enforcement procedures, regarding the prudency and resource-planning analyses that would require as beyond the scope of this docket. Otter Tail believes this docket should remain informational.

Fresh Energy notes that Minnesota Power failed to either provide complete reporting in this docket or provide valid or compelling reasons why Boswell 3 and 4 could not be moved to economic commitment. The record shows that Xcel Energy and Otter Tail have taken steps toward economic commitment and the customer benefits that strategy allows, while Minnesota Power has delayed action and deferred reporting. Fresh Energy thus believes it appropriate for the Commission to begin considering enforcement procedures against Minnesota Power.

Fresh Energy recommends that if Minnesota Power fails to implement an economic commitment strategy for fall 2020, the Commission should review the losses that might have been avoidable via economic commitment during the 2021 fuel cost True-Up proceeding, and require Minnesota Power to report on losses in excess of startup cost incurred during periods greater than or equal to minimum decommit time from September 1, 2020 until December 31, 2020 for each unit. This accounting should be included in the 2021 annual filing in this docket as well as Minnesota Power's 2021 fuel charge true up request.

Fresh Energy recommends that the Commission consider whether these losses are unreasonable, and if so, whether to adjust proposed FCA true-up amounts accordingly.

Sierra Club recommends that the Commission indicate to Otter Tail and Minnesota Power that it will disallow recovery of any fuel and variable O&M costs incurred as a result of uneconomic dispatch of their facilities, if those decisions are not backed by a forward looking analysis or otherwise justified. Both companies should keep adequate records to explain the decision making process for periods where the Company's operations deviate from the actions suggested by forward-looking analysis and the losses occur over a longer period than the facilities cool-down to warm and warm start-up times.

Commercial Customers believe that, if the Commission finds that utilities continue using uneconomic self-commitment strategies, the Commission should consider stronger ratepayer protections, including but not limited to cost disallowance. A full suite of ratepayer protection enforcement tools is crucial to correcting the balance of ratepayer and shareholder interests in these discussions.

6. Are there other issues or concerns related to this matter?

The Department has no other issues at this time.

Otter Tail believes the scope of this docket is appropriate and recommends against expansion of the scope.

Commercial Customers note that economic commitment can raise LMPs relative to self-commitment, but that this could still reduce overall production costs and benefit customers through a net cost savings. Commercial Customers cite an SPP study which reached this conclusion. Commercial Customers also note that the Minnesota hub has lower LMPs than other MISO hubs, which along with transmission constraints are part of the reason there has been little non-utility renewable development in Minnesota. A small increase in LMPs resulting from more efficient market-price signals could drive increased renewable development behind the Minnesota LMP hub, including more voluntary purchased-power agreements from independent power producers. Commercial Customers would benefit from having more zero fuel-cost resources available in the market.

VII. PUC Staff Comment

The primary decision before the Commission here is the adequacy of the utility filings. Most parties regard the filings as adequate for Otter Tail and Xcel Energy, though several want supplemental or additional information, either to be filed this year or to increase the scope of filings during next year's reporting. Fresh Energy and the Sierra Club regard Minnesota Power's filing as inadequate. It is clear that Minnesota Power has not yet filed any response to Ordering Paragraph 8, and promised to provide additional information on December 1, 2020. It may be appropriate for the Commission to "order" this filing, since the March 1, 2020 Minnesota Power filing was incomplete. The Commission could also find Minnesota Power to be out-of-compliance with the order, though Staff believes imposing any kind of penalty (such as increased scrutiny of fuel reconciliation) may be premature since this was the first filing under this new filing and reporting requirement.

The second decision before the Commission is whether to order any utility to do a complete cost/benefit analysis of switching to economic dispatch and/or to justify the decision not to go to economic dispatch. Several plants have already switched operationally to economic dispatch, either partly or totally. Otter Tail and Xcel Energy have justified not doing so with Coyote Station and Sherco 3 due to joint ownership concerns. Minnesota Power has claimed that MISO rules regarding resource adequacy interfere with doing so at Boswell. Staff finds the argument from Fresh Energy that Economic Commitment meets the "Must Offer" standard for certification from MISO convincing, since the plant is available for dispatch if either economics or necessity require it. Seasonal dispatch may not meet this standard, as a plant which is not offered at all is unavailable for dispatch.

Several parties have requested changes to the reporting requirement going forward. Staff believes there is merit to the Department proposal to standardize the filing using a working Excel spreadsheet. Staff does note that different utilities have provided different levels of detail in their workpapers regarding O&M expenses, providing ancillary revenues, etc., so it may be difficult for all three utilities to work out a single standard sheet. Staff recommends that the utilities work together to develop a single spreadsheet to put back before the Commission within 60 days of the date of the order for the approval of the Executive Secretary.

Other parties have suggested other changes. These include modifying the costs or revenues reportable to include all variable costs, regardless of whether they are included in the MISO offer curve. Staff believes that, at a minimum, all fuel costs should be included, so any utility (such as Otter Tail) that excludes certain fuel costs as fixed should be required to file 'both' models, one with those costs included and one without. Inclusion of other variable costs is a more difficult question – some 'variable' costs are variable at one level of analysis (say, defining the daily offer curve) while are fixed at another (such as determining whether to run the plant at all). Using the variable costs included in the offer curve has the merit of making it easy to evaluate dispatch. However, making the change suggested by Fresh Energy to Ordering Paragraph 9 may increase compliance costs for the utilities.

The other Department recommendations, regarding separately reporting ancillary services, splitting out variable and fuel costs, etc. have merit, and would allow all parties to conduct the analysis they desire without putting a finger on the scale by outright excluding certain revenues or costs. Labelling must-run hours would also be helpful for splitting out periods where the utility runs the plant at a loss voluntarily from those situations where they are doing so involuntarily.

Fresh Energy and Sierra Club both make several proposals which would impact fuel clause adjustments and IRPs. Though Staff recognizes the value of some of the data they are suggesting for the IRPs, ordering changes to future IRPs may be outside the scope of this docket. Staff also believes that most utilities are making progress toward improving their commitment strategies, and that taking an approach which potentially penalizes utilities for commitment decisions is premature at this time and may be outside the scope of this docket. Since Minnesota Power may be found to be out-of-compliance, ordering them to use economic dispatch where feasible, starting, say, January 1, 2021, if they fail to complete their filing by then may be appropriate.

VIII. Decision Alternatives

Adequacy of Xcel Energy's, Otter Tail's, and Minnesota Power's March 1, 2020 Reports

1. Find that Xcel Energy's filing in this docket is adequate and met the filing requirements. (Department, Sierra Club, Fresh Energy)

2. Find that Otter Tail's filing in this docket is adequate and met the filing requirements. (Department, Otter Tail, Fresh Energy)

3. Find that Minnesota Power's filing in this docket is adequate and met the filing requirements. <u>or</u>

4. Find that Minnesota Power failed to meet the requirements in Ordering Paragraph 8 of the November 2019 Order and instruct Minnesota Power to file a complete report on or before December 1, 2020. <u>or</u>

5. Find that Minnesota Power failed to meet the requirements in Ordering Paragraph 8 of the November 2019 Order and instruct Minnesota Power to file a complete report covering July 2018 through December 2020 with its March 1, 2021 filing in this docket.

Should Complete Cost-Benefit Analyses of Economic and Seasonal Dispatch be Required?

6. Require the appropriate utility to file in their March 1, 2021 filing (or some other date to be determined by the Commission) a complete analysis of the costs and benefits of economic or seasonal dispatch relative to self-scheduling at the following facilities:

    a. Boswell 3 and Boswell 4 – Minnesota Power (Sierra Club, Fresh Energy, Department)

    b. Coyote Station – Otter Tail (Sierra Club, Fresh Energy)

    c. Sherco 1 and Sherco 3 – Xcel Energy (Department, Sierra Club, Fresh Energy)

Formatting Requirements and Formulas to be Used in Future Annual Filings

7. Require all utilities to file a compliance filing within 60 days of the Commission's order containing the required data, with formulae intact, that the utilities will fill out for each unit in future filings, including clear definitions of each input. (Department)

    a. Delegate authority to the Executive Secretary to approve this compliance filing for use in the March 2021 filings in this docket. (Staff)

Annual Filing Requirement Modifications

8. Modify the annual filing requirements in Ordering Paragraphs 8 through 10 in the Order of November 2019 as follows:

    a. Include ancillary services revenues and any other make-whole payments as a separate column in all reporting on revenue from generation. (Department)

    b. Utilities should provide Unit Fuel Costs and Unit Variable Cost as separate line items. (Department)

    c. 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. (Fresh Energy, Sierra Club)

    d. Utilities should include all preventative maintenance in O&M costs for reporting purposes. (Fresh Energy, Sierra Club)

    e. 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.) (Department, Fresh Energy, Sierra Club)

    f. Modify Ordering Paragraph 9 of the November 13, 2019 Order to read:

    > The Commission will open an investigation in a separate docket and require Minnesota Power, Otter Tail, and Xcel to report their future self-commitment and self-scheduling analyses using a consistent methodology by including <u>all production costs including</u> fuel, ~~cost~~ variable O&M ~~costs, matching the offer curve submitted to MISO energy markets,~~ <u>and any other variable costs associated with the plant</u>. (Fresh Energy)

    g. Report net benefit/(cost) using total production cost but provide columns for hourly unit fuel and variable O&M in workpapers (Fresh Energy)

    h. Not include ancillary service market (ASM) revenues in the calculation of net benefit/(cost), but utilities may report ASM revenues and discuss their relevance to the analysis. (Fresh Energy)

i. Require utilities to provide in future Annual Reports in this docket: (Fresh Energy)

    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)

    iv. Sum of losses in excess of startup cost that were incurred during periods identified in (iii)

Enforcement and Plant Management Orders

9. Require utilities to establish a clear and auditable mechanism of determining whether its commitment decisions are in the best interest of ratepayers. (Sierra Club)

10. Require Minnesota Power to use MISO's economic commitment status for Boswell 3 and Boswell 4. (Sierra Club alternate)

    OR

11. Require Minnesota Power to provide a plan in this docket for moving one or more Boswell units to an economic-based strategy. (Fresh Energy)

12. Indicate in the Commission's order that in each utilities next Fuel Cause Adjustment True-up proceeding, the Commission will disallow recovery from ratepayers any fuel and variable operations and maintenance (O&M) costs incurred as a result of uneconomic use of self-scheduling at coal facilities which have not begun using an economic commitment strategy, where not supported by a forward-looking analysis of unit commitment strategies which uses Locational Marginal Price forecasts, unit operational costs, and unit start-up and shut-down costs to determine daily whether to self-commit a unit or to take it offline during periods of low market prices. Utilities should retain this analysis to allow the Commission to evaluate in fuel clause adjustment proceedings whether a unit's commitment decision maximized its economic value to the utility's customers. (Sierra Club)

13. Require Minnesota Power and Otter Tail, in their next respective IRPs, to evaluate whether there are lower cost alternatives for meeting their resource adequacy requirements, and for obtaining reliability and ancillary services, than self-scheduling its baseload facilities. Alternatives to be evaluated should include construction of new generation facilities, bi-lateral capacity purchases, and purchase of capacity through the MISO capacity auction. (Sierra Club)

14. Require Minnesota Power, in its next IRP, to evaluate whether reducing minimum operating levels at Boswell 3 and/or Boswell 4 would benefit customers. (Sierra Club)

15. Require Otter Tail, in its next IRP, to evaluate whether reducing minimum operating levels at Big Stone and/or Coyote Station would benefit customers. (Sierra Club)

16. Coal Contracts

    a. Require all utilities to identify any proposed new coal contracts in Fuel Clause Adjustment proceedings, and to submit them for prudence review in those proceedings, before signing any such contracts. (Sierra Club), and
    b. Indicate in the Commission's order that any fuel contracts that prohibit disclosure of the contracts' terms without Commission order is per se counter to the public interest (Sierra Club), and
    c. Require Otter Tail to evaluate whether continued participation in its 25-year coal supply contract at Coyote Station is in the customer's interest in its next Integrated Resource Plan. (Sierra Club)

    (OR)

    d. Require Otter Tail to provide a discussion of the options and costs 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 this docket. (Fresh Energy) and
    e. Indicate in the Commission's order that the Commission will review the prudency of this contract at Otter Tail's next fuel clause adjustment and disallow any imprudent associated costs. (Fresh Energy)

17. Require utilities with co-ownership of baseload generating facilities to either develop methods of economically committing those units within the terms of their partnership, or justify in their next report in this docket the prudence of continued operation of that unit as a joint owner (Sierra Club)

18. Require utilities to document periods where a baseload plant on self-commitment is dispatched uneconomically above their operating minimums, including
    a. Identify for each hour where this phenomenon is observed and identify the reason for the dispatch.
    b. For each reason, identify how frequently it occurs.
    c. Keep a record going forward with an explanation for each instance of uneconomic dispatch above operating minimums which lasts more than 4 hours. (Sierra Club)