PUBLIC DOCUMENT:
TRADE SECRET DATA HAS BEEN EXCISED

minnesota power
AN ALLETE COMPANY

30 West Superior Street
Duluth, MN 55802-2093
www.mnpower.com

May 27, 2021

VIA E-FILING
Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

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

Dear Mr. Seuffert:

Minnesota Power respectfully submits Reply Comments in response to the comments submitted on April 30, 2021, by the Minnesota Department of Commerce, Division of Energy Resources, and Fresh Energy in the above referenced Docket.

Please contact me at (218) 355-3455 or hcreurer@allete.com if you have any questions regarding this filing.

Kind Regards,

Hillary A. Creurer
Regulatory Compliance Administrator

HAC:th
Attach.

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of an Investigation into Self-Commitment and Self-Scheduling of Large Baseload Generation Facilities	Docket No. E999/CI-19-704 **MINNESOTA POWER'S REPLY COMMENTS**

I. INTRODUCTION

Minnesota Power (or the "Company") submits these Reply Comments in response to the Minnesota Department of Commerce – Division of Energy Resources ("Department") and Fresh Energy who filed Comments on April 30, 2021 in the above-referenced Docket.

II. RESPONSE TO COMMENTS

A. Fuel Costs

In the Department's Comments they requested companies explain in reply comments how to determine variable fuel costs versus fixed fuel costs (what costs would be incur on fuel if 0 MWh were produced) based on the data reported. In Minnesota Power's March 1 Compliance filing the Unit Fuel Costs provided is the actual average cost of inventory on hand for each month. To calculate the average cost of inventory on hand, each month one takes the beginning inventory balance (tons and costs), adds all costs and tons associated with the current month's fuel deliveries, and a new inventory balance is calculated. This average cost of inventory value is then applied to current month's coal burn. All of Minnesota Power's fuel costs are captured in the Unit Fuel Costs category and that is why no dollars were included in the Remaining Unit Fuel Cost category.

If Minnesota Power produced 0 MWhs during a one month period there would be no coal burn of which to apply the average cost of inventory and any current month fuel deliveries would be added to the average cost of inventory on hand.

From a contractual obligation stand point, Minnesota Power's contracts **[TRADE SECRET DATA BEGINS** [redacted] **TRADE SECRET DATA ENDS]**

B. May 2020 Economic Dispatch Trial

Minnesota Power, as part of a trial, put Boswell Unit 3 on Economic Dispatch for approximately one month in May 2020. The goals were to develop an effective offer strategy for MISO, develop an emissions management strategy, and evaluate any impacts to transmission reliability.

The unit was offered economically beginning on May 7, 2020 and remained in reserve shutdown, which is an economic standby status until May 26, 2020 and May 27, 2020, when the unit was cleared in the day ahead market. After this run, the unit was returned to Must Run, since Boswell Unit 4 was preparing to come down for a planned outage.

Unfortunately, the unit was not dispatched when requested and took approximately 15 hours more than planned due to equipment failures experienced during start-up.

Though little change was seen in Day Ahead prices during the trial, Real Time prices were 14 percent higher than Real Time prices during the 20 days leading up to the trial. The increase in Real Time prices eroded some of the value realized from the trial. This might have been due to Boswell Unit 3 energy not being available in the real time, which resulted in higher cost generation resources being dispatched by MISO balance variations in real time caused by errors in forecasts (i.e. load and renewables) and forced outages experienced on the system.

New communication practices were used to coordinate accurate startup fuel for the daily offers.

The unit experienced challenges bringing the unit from a cold start condition to "dispatchable" (full load capability). All fuel, water, and air systems need to startup and

function seamlessly with minimal process upsets to startup reliably. As a result, a layup process is under development to ensure equipment is reliable upon startup. The unit getting called on Memorial Day brought challenges calling in personnel to assist with startup. Staff scheduling during startup will need review. Startup checklists were also identified as a way to more efficiently manage the process. Review of Preventative Maintenance tasks that need modifying and overall maintenance strategy shifts will be ongoing as we have more experience. No emissions constraints were identified during the trial, primarily since the unit remained in economic standby for the majority of the trial.

Minnesota Power System Operations was concerned about system changes during the trial, as large industrial load customers were idling or reducing production due to the developing COVID-19 impacts. Minnesota Power worked closely with MISO to study the local and regional impacts from different load reduction scenarios. The primary concerns were the ability to regulate high voltage if additional local generation was forced offline. Studies showed that Boswell Unit 3 did not need to be taken off of its economic trial under the expected conditions.

Through the trial, Minnesota Power proved that there was market benefit to offering Boswell Unit 3 on an economic basis during this time period and the unit offer was reflective of Boswell Unit 3 cost. The Company will continue to do further analysis as we move to economic dispatch when prices are at a higher level to ensure the offer is prudent in the MISO market and is ensuring Least Cost Supply to Minnesota Power Customers.

C. Transmission

In Fresh Energy's Comments they requested Minnesota Power provide a list of the grid services that are impacted by economic operations at one or more Boswell units. After further discussion with Fresh Energy the information provided on April 29, 2021, as part

of Minnesota Power's response to Information Request 24, in addition to Appendix F included in the Integrated Resource Plan,[1] provided the requested information.

III. FUTURE REPORTING RECOMMENDATIONS

A. Carbon Emissions

Minnesota Power is supportive of providing carbon dioxide emission reductions at the site as we move to greater economic commitment. This approach will not capture overall carbon reductions on the system or carbon associated with replacement energy due to economic dispatch. For system-wide reductions, refer to the IRP process.

B. Transmission Study

Minnesota Power's concerns with respect to system strength are rooted in real-world experiences and concern for the complexities, risk, and uncertainties associated with operating the Northern Minnesota transmission system with no large baseload generators online. In the modern history of the Northern Minnesota transmission system, operating with no local generation online for an extended period of time is relatively unprecedented. Minnesota Power's recent experiences in the Grand Rapids area and the North Shore Loop also support a careful and thoughtful approach to this transition in order to avoid unanticipated adverse impacts to system operations and customers from degraded system strength. Based on these experiences and a preliminary assessment of impacts from both Boswell units being offline, Minnesota Power has concluded as a foundational assumption that, at a minimum, local short circuit capability similar to what has been provided by Boswell Unit 3 is required at all times on the Minnesota Power transmission system. While there is room for refinement of this understanding, Minnesota Power's firm conclusion is that at least some amount of local short circuit capability and voltage support is necessary to provide a continuous, predictable, and redundant local source to meet the needs of Minnesota Power's customers.

[1] In the Matter of Minnesota Power's Application for Approval of its 2021-2035 Integrated Resource Plan in Docket No. E015/RP-21-33.

To further our understanding and refine our approach to addressing these concerns, Minnesota Power has already commissioned a consultant to provide a detailed assessment of the system strength presently provided to the transmission system by the Boswell units, identify areas of particular concern with the Boswell units offline, develop planning and operating criteria that may be used to maintain a minimum level of system strength for Minnesota Power's system, and recommend long-term mitigations for ensuring that adequate system strength is available on Minnesota Power's system under a variety of operating conditions, including normal conditions, during routine outages, and for unexpected contingencies caused by forced outages on the transmission system and/or at a generator. The study was kicked off in mid-May of 2021 and is expected to be completed by the end of 2021. Information from the study available in mid-2021 will support the development of a system strength operating guide used by MISO system operators for maintaining adequate system strength when Boswell Unit 3 enters economic operation. The study will also define the recommended mitigation solutions for implementation in conjunction with future transition of the Boswell units, including moving Boswell Unit 4 to economic operation and retirement of Boswell Unit 3.

In parallel with this consultant investigation, Minnesota Power is also in the early stages of evaluating the cost and complexity of retrofitting existing generating units on its system, including the Boswell units, with synchronous condenser capability. Since synchronous condensers are a solution of primary interest for providing system strength, Minnesota Power hopes to develop enough information about the scope and cost of adding synchronous condenser capability to its existing generating units to be able to move relatively quickly if the consultant investigation described above indicates such a solution is justified.

Since these efforts are already underway, Minnesota Power does not see a need to commission a different study as recommended by Fresh Energy. Minnesota Power will provide updates on the consultant study and the synchronous condenser conversion investigations with our March 1, 2022 compliance filing.

Dated: May 27, 2021

Respectfully Submitted,

Hillary A. Creurer
Regulatory Compliance Administrator
Minnesota Power
30 W. Superior Street
Duluth, MN 55802
(218) 355-3455
hcreurer@allete.com

STATE OF MINNESOTA	)	AFFIDAVIT OF SERVICE VIA
	) ss	ELECTRONIC FILING
COUNTY OF ST. LOUIS	)	

Tiana Heger of the City of Duluth, County of St. Louis, State of Minnesota, says that on the 27th day of May, 2021, she served Minnesota Power's Reply Comments in **Docket No. E999/CI-19-704** on the Minnesota Public Utilities Commission and the Energy Resources Division of the Minnesota Department of Commerce via electronic filing. The persons on E-Docket's Official Service List for this Docket were served as requested.

Tiana Heger