

215 South Cascade Street
PO Box 496
Fergus Falls, Minnesota 56538-0496
218 739-8200
www.otpc.com (web site)



March 18, 2024

Mr. Steve Kahl
Director of Administration/Executive Secretary
North Dakota Public Service Commission
State Capitol
600 East Boulevard, Dept. 408
Bismarck, ND 58505-0408

**RE: In the Matter of Otter Tail Power Company Advance Prudence Application–
Astoria Station Onsite Fuel Inventory System
Surrebuttal Post-Hearing Brief
Case No. PU-23-066
OAH File No. 202300080**

Dear Mr. Kahl:

Otter Tail Power Company (Otter Tail) hereby submits to the North Dakota Public Service Commission (Commission) its Surrebuttal Post-Hearing Brief in the above-referenced matter.

Copies have been sent to you via USPS.

Please contact me at (218) 739-8956 or cstephenson@otpc.com if you have any questions regarding this filing.

Sincerely,

/S/ CARY STEPHENSON
Cary Stephenson
Associate General Counsel

vjm
Enclosures
By electronic filing and U.S. mail

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Surrebuttal Post-Hearing Brief
Otter Tail Power Company
Cary Stephenson, Assoc. Gen. Counsel

**STATE OF NORTH DAKOTA
BEFORE THE
NORTH DAKOTA PUBLIC SERVICE COMMISSION**

In the Matter of Otter Tail Power Company Advance Prudence Application
Astoria Station Onsite Fuel Inventory System

Case No. PU-23-066
OAH FILE No. 202300080

Surrebuttal Post-Hearing Brief of Otter Tail Power Company

March 18, 2024

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I. INTRODUCTION

Otter Tail Power Company (Otter Tail or Company) submits this surrebuttal brief responding to Advocacy Staff's post-hearing rebuttal brief filed March 4, 2024. This brief follows a hearing on December 12, 2023, where the Commission received testimony and other evidence from Otter Tail and Advocacy Staff witnesses.

As more fully stated below, the record demonstrates a need for fuel storage capability at Astoria Station to address natural gas market volatility and supply disruptions associated with extreme events, and that liquified natural gas (LNG) fuel storage is the most responsible and cost-effective means to address the need because other measures such as financial hedging instruments or alternative storage options are inadequate, financially infeasible, or not available.

The record further reflects that there are multi-faceted benefits from LNG fuel storage at Astoria Station, including mitigation of intraday pricing risk, enhanced reliability from fuel assurance, protection of Astoria Station capacity accreditation, and energy hedge value for Otter Tail's customers. In sum, the Commission can and should find that the proposed on-site LNG fuel storage project is prudent.

II. OTTER TAIL HAS DEMONSTRATED THE NEED FOR AND PRUDENCE OF LNG FUEL STORAGE AT ASTORIA STATION.

Advocacy Staff argues that Otter Tail has failed to (1) demonstrate a need for LNG fuel storage at Astoria Station and (2) that the proposed fuel storage project is not prudent. In doing so Advocacy Staff fails to address key testimony and facts before the Commission supporting LNG fuel storage. As noted herein, there is risk-driven need for LNG fuel storage, and the record demonstrates the prudence of moving forward with this project.

A. Otter Tail Has Identified Risk-Driven Needs For LNG Fuel Storage At Astoria Station.

1. Risk-Driven Needs

As noted in Otter Tail’s post hearing brief, the Company’s ADP Application is not based on a specific energy or capacity need; it is based on the need to mitigate risks associated with extreme disruptive events. These events – usually weather driven - can create extraordinary natural gas market volatility exposing our customers to significant economic consequences and in some instances could prevent Astoria Station from operating with attendant impacts to reliability and capacity accreditation.

The risk of extreme weather events is real. This risk is demonstrated most recently during Winter Storm Uri in February 2021 and Winter Storm Elliot in December 2022. In fact, it was the catastrophic reliability impacts and event-driven costs of Winter Storm Uri that prompted Otter Tail to assess the need for dual fuel capability at Astoria Station. Otter Tail witness Bradley Tollerson testified that the unprecedented market volatility and harm caused by Winter Storm Uri¹ shifted thinking within the electric utility industry.² Until that point the risk of widespread disruptions to pipeline delivered gas and the consequences of such disruptions was not fully appreciated. This was a particularly noteworthy development for Otter Tail notwithstanding the fact that most impacts were seen in areas served by SPP and

¹ “In February 2021, a severe cold weather event – also known as Winter Storm Uri – caused numerous outages, derates or failures to start at electric generating plants scattered across the region. The Texas grid operator (Electric Reliability Council of Texas or ERCOT) ordered a total of 20,000 MW of rolling blackouts in an effort to prevent grid collapse; this represents the largest manually controlled load shedding event in U.S. history. More than 4.5 million people in Texas lost power – some for as long as four days. Tragically, the loss of electricity caused the deaths of numerous Texans.” FERC News Release, November 16, 2021 available at <https://www.ferc.gov/news-events/news/final-report-february-2021-freeze-underscores-winterization-recommendations>. FERC, NERC and Regional Entity Staff Report on Winter Storm Uri is available at <https://www.ferc.gov/media/february-2021-cold-weather-outages-texas-and-south-central-united-states-ferc-nerc-and> The Commission can take judicial notice of FERC’s news release and report.

² Tollerson Transcript pp. 21-23; 30-32. Mr. Tollerson explained that Astoria Station was prudent when initial proposed and remains prudent today. However, recent events – namely Winter Storm Uri, required an assessment of risk based on the unprecedented nature of that event.

ERCOT. Mr. Tollerson and Otter Tail witness Ryan Retzlaff explained that Otter Tail customers largely avoided the impacts of Winter Storm Uri because Astoria Station was not yet in commercial service. Had the circumstances of Winter Storm Uri been slightly different the impacts could have extended to MISO and Otter Tail customers.

Winter Storm Elliot, a bomb cyclone weather event, came 22 months after Winter Storm Uri. During Winter Storm Elliot, Otter Tail experienced a forced outage at Astoria Station due to lack of fuel supply on the Northern Border Pipeline and extreme natural gas pricing of \$150/MMBtu.³ Otter Tail customers were largely spared from negative consequences during this event due to strong regional wind generation that kept Otter Tail LMP pricing low.⁴ Had wind generation conditions been different, Otter Tail customers could have seen significant negative economic consequences.

The risks that extreme weather events pose for pipeline-served natural gas turbines like Astoria Station are two-fold. First, customers are exposed to significant cost impacts attributable to intra-day pricing risk; a risk caused by misalignment of natural gas and energy markets. In general, intraday pricing risk is driven by the fact that Otter Tail must buy day ahead natural gas for Astoria Station and offer Astoria Station's output to MISO well in advance of MISO clearing Otter Tail's offer. Depending on how MISO clears the Company's offer, the Company may need to secure additional natural gas at then prevailing market rates or sell back unused gas. As noted by Mr. Retzlaff, "in the most basic terms, intraday pricing risk is the risk of having to make generation offers to MISO without the ability to know what the cost of those offers will ultimately be. This issue is further compounded when considering MISO only guarantees make whole payments based on offer costs, not actual fuel procurement

³ Otter Tail also experienced MISO committing Astoria for reliability purposes under a unit offer utilizing approximately \$120/MMBtu natural gas costs even though locational marginal pricing (LMP) at Astoria Station was relatively low at the time. Retzlaff Direct (OTP Ex.5) at pp. 7-8. The divergence of gas markets and LMP markets during Winter Storm Elliot was unusual. Otter Tail customers could have seen very different results if regional LMP pricing would have followed natural gas pricing. Id.

⁴ ADP Application (OTP Ex 1) p. 26; Retzlaff Direct (OTP Ex. 5) p. 8.

costs.”⁵ This risk was highlighted during Winter Storm Uri. Importantly - this risk is borne by Otter Tail customers through the Company’s fuel clause.

The second primary risk is the potential that Astoria Station may not be able to operate because of interruptions in pipeline delivered natural gas due to production facility freeze offs, pipeline line disruptions, and related interruptions affecting the delivery of fuel.⁶ Absent fuel, Otter Tail is unable to offer Astoria Station for dispatch when called upon by MISO, with potential negative impacts on reliability and Astoria Station capacity accreditation.

2. Advocacy Staff’s Analysis of Need

Advocacy Staff dismisses the threat of severe weather events as speculation, suggesting that scientific evidence concerning the frequency and timing of future events is necessary to support Otter Tail’s Application. This argument misses the point. The variability and unpredictability of extreme events are components of the risk. If the frequency, location, and duration of such events were predictable the equation would be different. Advocacy Staff’s position is also at odds with recommendations from MISO, FERC, and NERC (and others) for generation owners to take action to ensure reliability during extreme events.⁷ Moreover, it is reasonable to expect and plan for winter storms that may be as extreme or more extreme than Winter Storms Uri and Elliot. While it is

⁵ Retzlaff Transcript pp. 70-71. Mr. Retzlaff has also explained that “[i]ntraday pricing risk can also occur if MISO were to call upon the unit unexpectedly during the real time market, which occurred during Winter Storm Elliot. Forward gas purchases, natural gas call options, and natural gas storage alternatives, are bound to the scheduling constraints of the daily natural gas trading schedule. They must be nominated, executed, or liquidated at defined periods of the gas trading day. As such, these mechanisms would experience extended periods of unavailability. Onsite LNG storage is available on demand at any time of the day, under all market conditions, and is the optimal hedging mechanism for intraday pricing risk. It is also the only hedging mechanism that can hedge against loss of physical natural gas supply.” Retzlaff Surrebuttal (OTP Ex. 8) p.3.

⁶ “...a potential weakness to the North Dakota generation fleet is the supply of natural gas to combustion turbine generation facilities. The primary source of fuel for these units is the Northern Border pipeline. The pipeline imports Canadian and Bakken produced natural gas. Natural gas-fired combustion turbines do not store fuel on-site. Therefore, the reliability of this fuel source should be considered as part of generation resource availability.” *North Dakota Grid Resiliency Plan, Final Report prepared for North Dakota Transmission Authority by North Dakota Energy & Environmental Research Center*, September 1, 2023, at p. 52, cited in Jensen Rebuttal (OTP Ex. 12) at p. 5.

⁷ Jensen Rebuttal (OTP Ex. 12) pp. 2-3.

inherently difficult to predict the frequency and severity of future extreme weather events, it would be irresponsible to not plan for them.

Advocacy staff also appears to misconstrue the nature of the need for on-site fuel storage at Astoria Station. Specifically, Advocacy Staff suggests that the primary issue driving Otter Tail's Application is the risk of MISO derating Astoria Station's capacity accreditation in response to the plant being unavailable for dispatch. This characterization is off target in so far as it suggests this issue is the driving force of Otter Tail's Application; it is a significant issue, but only one of several significant risks to address. Mr. Tollerson and Mr. Jensen testified that Astoria Station's forced outage during Winter Storm Elliot will likely cause MISO to derate Astoria Station's accredited capacity by approximately 50 MWs for a three-year period.⁸ This reduction in capacity accreditation does not leave Otter Tail short on required capacity levels. It does however result in an opportunity cost because it reduces the capacity that Otter Tail could otherwise offer in the MISO capacity auction for the benefit of Otter Tail's customers.⁹ On-site LNG fuel storage at Astoria Station effectively addresses this issue by providing fuel assurance regardless of pipeline disruptions. While the Commission should certainly consider accreditation and opportunity cost risk, it should do so in the context of the other risks identified by Otter Tail and how LNG fuel storage addresses those risks.

Advocacy Staff also gives little consideration to intra-day pricing risk, noting in a proposed finding that such risks are well known and may be mitigated through FERC Order 809.¹⁰ Otter Tail does not dispute that intra-day pricing risks are well known. Mr. Retzlaff discussed the problem and challenges posed by intra-day pricing risk at length during hearing. Time is of the essence however, and FERC Order 809 (issued in

⁸ Tollerson Transcript at 24-25; Jensen Transcript pp. 140 -143.

⁹ "And so even though we may have length, the fact that we have length means that we would sell the capacity if it were available from the unit. That revenue would be a direct offset to our customers' rates. So while there may not be a real cost of having to buy purchased capacity, there is an opportunity cost in not being able to sell capacity that we would otherwise have." Tollerson Transcript at 26.

¹⁰ Advocacy Staff Proposed Finding of Fact 25.

2016) has done little to alter or reduce these risks. While Otter Tail welcomes improved coordination efforts, there is nothing in the record to suggest that intraday pricing risks in the MISO region will be reduced in the future.

B. Astoria Station LNG Fuel Storage Is A Prudent Resource Modification.

Having identified a risk-based need, Otter Tail has put forward a plan that best addresses the need: LNG fuel storage. Before selecting this solution, Otter Tail examined alternatives, none of which addressed the full range of risks associated with extreme events. The record reflects that LNG storage is the most responsible, operationally sound, and cost-effective means to address the risks noted above. The Commission can consider the following points in this regard.

Dual Fuel Alternatives - Otter Tail initially considered dual fuel capability at Astoria Station using fuel oil. Otter Tail's analysis, however, indicated over a 30-year life stored LNG was less expensive.¹¹ Advocacy Staff witness James Heidell agreed with this assessment.¹²

Pipeline Alternatives - Otter Tail considered connecting to other natural gas pipelines, including the Great Lake Pipeline and Northern Natural Gas pipelines. These options were cost prohibitive.¹³

Financial Instrument Alternatives - Otter Tail witness Mr. Retzlaff explained the Company's assessment of forward natural gas purchases and natural gas call options, both with physical delivery of natural gas, as financial instrument alternatives.¹⁴ He noted that while such instruments may help manage some types of risks, they are unable to adequately mitigate intraday pricing risk, particularly during extreme system events.¹⁵ Moreover these instruments do not

¹¹ Phinney Direct (OTP Ex 9) p. 5.

¹² Heidell Direct (PSC Ex. 1) p. 6.

¹³ Heidell Direct (PSC Ex. 1) p. 6.

¹⁴ Heidell Direct (PSC Ex. 1) p. 11.

¹⁵ Retzlaff Transcript pp. 78-81.

address instances when pipeline delivered gas is not available due to production or pipeline disruptions. Advocacy Staff witness Mr. Heidell also acknowledged that LNG fuel storage is the most reasonable option to ensure operational reliability.¹⁶ Mr. Retzlaff also explained the significant shortcomings of financial hedging instruments,¹⁷ including “complexity of sizing, liquidity, expense, and long-term price certainty.”¹⁸ To be effective, hedging instruments would need to be oversized and thus very expensive to carry a generation unit through a significant winter event. In some cases these instruments are not liquid (i.e. not available or difficult to find) which is the case for call options, and these instruments generally lack long term price certainty into forward years, limiting their usefulness.¹⁹ All of these instruments compare poorly to on-site fuel storage as means to manage intraday pricing risk, and none provide a hedge against physical loss of natural gas supply.

Battery Storage - Otter Tail assessed battery storage. While there may be capacity benefits this option was not operationally sound and far too costly for long duration coverage.²⁰

The Commission can also take notice that the options evaluated by Otter Tail correspond closely to the NERC recommendations to generation owners for improving fuel assurance of their generation units:

Generator owners/operators should seek reliable delivery solutions from both a transportation and commodity perspective. Monitor and evaluate risks associated with varying levels of transportation or delivery options associated with the different types of transportation (e.g., interruptible transportation, firm transportation). Consider and evaluate a diverse

¹⁶ Heidell Direct (PSC Ex.1) p. 17.

¹⁷ Otter Tail examination of hedging instruments included forward natural gas purchases, natural gas call options, and natural gas storage alternatives. Heidell Direct (PSC Ex. 1) p. 11; Retzlaff Rebuttal (OTP Ex. 6) p.12.

¹⁸ Retzlaff Surrebuttal (OTP Ex. 8) p. 2.

¹⁹ Id.

²⁰ Heidell Direct (PSC Ex.1) p. 16-17.

portfolio of products that can be utilized to deliver fuel both reliably and cost-effectively; examples of these are as follows:

- Delivered bundled products
- Firm call options for periods of heightened fuel uncertainty
- Asset management arrangements
- Potential purchases from suppliers with firm capabilities
- Enhanced infrastructure considerations
- Storage capacity
- Liquefied natural gas (LNG) options
- Dual-fuel capability
- Interconnection with more than one pipeline
- On-site fuel reserves.

Generator owners/operators should consider credible fuel-related contingencies that impact their facilities and provide fuel-related facility outage concerns as necessary to the reliability authority. Lastly, where fuel delivery constraints are routinely evident, generator owners/operators should consider and investigate whether new options for fuel deliveries to a specific facility or their fleet are available.²¹

Otter Tail's on-site LNG fuel storage proposal incorporates NERC's recommended strategies of (1) storage capacity, (2) dual fuel capability, and (3) on-site fuel reserves. Other NERC factors have already been incorporated into Astoria Station's operations, are inapplicable, or are not financially or operationally feasible as noted above.

In the end Advocacy Staff's position is that LNG fuel storage is not cost effective in relation to the risk and that it is better to wait because the risks may not materialize, and if the risks materialize, the impacts may be less than the cost of the proposed LNG fuel storage project. Advocacy Staff's position, however, rests on a flawed analysis of the risks and the cost effectiveness of LNG fuel storage.

As noted above, the possibility of another Winter Storm Uri or Elliot cannot be discounted or dismissed; entities such as FERC, NERC and MISO are not discounting such

²¹ NERC Reliability Guideline, Fuel Assurance and Fuel Related Reliability Risk Analysis for the Bulk Power System, March 2020, p. 1.

a possibility. The record is also clear that a future Winter Storm Uri-like event can have catastrophic cost and reliability impacts. The record also demonstrates the significant potential financial benefits of LNG fuel storage at Astoria Station. Mr. Retzlaff provided an analysis of the potential financial benefits of on-site LNG fuel storage based on an analysis of Winter Storm Uri. Using reasonable and prudent assumptions, Mr. Retzlaff's analysis reflects a net benefit of on-site LNG fuel storage ranging from \$4.7 million to \$23.7 million *for a single* extreme winter event.²² These benefits stem largely from minimizing intra-day pricing risk. Mr. Heidell has criticized this analysis as overstated, but that criticism is based on a fundamental misunderstanding on the logistics, sequencing, and timing of the components of intra-day pricing risk.²³

As Otter Tail noted in its post-hearing brief, self-insuring is the least cost option – until it is not. Because the financial risks that Otter Tail seeks to mitigate and limit through on-site fuel storage are passed through to customers through the Company's fuel clause, the prudent option is not to wait see; the prudent option is to add on-site fuel storage to Astoria Station.

Advocacy Staff has also raised questions about a recently issued FERC Order concerning cold weather reliability standards²⁴ suggesting the standards demonstrate the proposed LNG fuel storage project is not prudent, at least at this time. As understood by Otter Tail, Advocacy Staff's point is that this development may mitigate risks to natural gas owners/operators therefore there is value in waiting.

While efforts to address cold-weather reliability risks are welcome, the standards cited by Advocacy Staff do not apply to generator owners or operators. The standards apply to balancing authorities, transmission operators, transmission owners and distribution providers. In general, these new requirements may impact MISO operating

²² Retzlaff Direct (OTP Ex. 5) p. 6.

²³ Otter Tail Post Hearing Brief, pp. 21-22. Also note that foregoing net benefits would be in addition to hedging value provided by fuel storage, as well as preservation of capacity accreditation.

²⁴ Order Approving Extreme Cold Weather Reliability Standards EOP-011-4 and TOP-002-5, FERC Docket No. RD24-1, February 15, 2024.

procedures, and possibly OTP's load-shedding plans, but they will not have a direct impact on Astoria Station because the requirements do not ensure the natural gas system's ability to deliver fuel per se; they only reduce unintended curtailments due to load-shedding.

The record before the Commission demonstrates there is a need to address the risks associated with extreme weather events on the operations of Astoria Station, and that this need is best met by LNG fuel storage, and that Otter Tail's proposal is prudent.

DATED: March 18, 2024

Respectfully submitted,

OTTER TAIL POWER COMPANY

By: /s/ CARY STEPHENSON
Cary Stephenson
Associate General Counsel
Otter Tail Power Company
215 S. Cascade Street
Fergus Falls, MN 56538-0496
(218) 739-8200
cstephenson@otpc.com