



Before the North Dakota Public Service Commission  
State of North Dakota

In the Matter of the Application of Otter Tail Power Company  
For Advance Prudence on the Astoria Station Onsite  
Fuel Inventory System in North Dakota

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

Exhibit \_\_\_\_\_

**ASTORIA STATION PROJECT**

Rebuttal Testimony

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October 16, 2023

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1 **I. INTRODUCTION AND QUALIFICATIONS**

2 Q. PLEASE STATE YOUR NAME AND TITLE.

3 A. My name is Nathan Jensen, and I am the Manager of Resource Planning at Otter  
4 Tail Power Company (Otter Tail or Company).

5  
6 Q. HAVE YOU PREVIOUSLY PROVIDED TESTIMONY IN THESE PROCEEDING?

7 A. Yes, I filed Direct Testimony supporting the Company's application for an  
8 advanced determination of prudence for the Company's Astoria Station fuel  
9 storage project.

10 **II. PURPOSE AND OVERVIEW OF REBUTTAL TESTIMONY**

11 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

12 A. The purpose of my testimony is to address certain points in the Testimony of  
13 Advocacy Staff witness Mr. James Heidell. Specifically I address the issue of the  
14 reliability benefits of fuel storage at Astoria Station and respond to Mr. Heidell's  
15 testimony on this topic.

16 **III. RESPONSE TO DIRECT TESTIMONY OF JAMES HEIDELL**

17 Q. DO YOU HAVE CONCERNS REGARDING MR. HEIDELL'S DIRECT  
18 TESTIMONY?

19 A. Yes. My primary concern is the testimony Mr. Heidell offers on the issue of  
20 reliability. Most of his testimony is focused on Astoria Station as hedge against  
21 extreme gas prices. I believe more emphasis should be directed toward reliability  
22 provided by fuel assurance at Astoria Station.

23  
24 Q. WHAT DID MR. HEIDELL CONCLUDE REGARDING RELIABILITY?

25 A. Mr. Heidell concludes that "while onsite fuel storage provides additional MISO  
26 system reliability, the benefits of that additional reliability are hard to quantify  
27 given the existing winter reserve margin requirement of over 25% and Otter's  
28 classification the over 90% of its generation is already resilient."

1 Q. DO YOU AGREE WITH THIS CONCLUSION?

2 A. I agree that reliability projects do not generally fit well within a traditional cost  
3 benefit analysis and therefore it is hard to quantify net reliability benefits. My  
4 concern with Mr. Heidell's testimony is that it does not appear to consider the  
5 broader context of calls from the Midcontinent Independent System Operator  
6 (MISO), the Federal Energy Regulatory Commission (FERC), the North American  
7 Electric Reliability Corporation (NERC) and others for generation owners to take  
8 action to ensure reliability during extreme events. I also take issue with Mr.  
9 Heidell's conclusions to the extent he suggests Otter Tail's planning reserve margin  
10 and the percentage of resilient generation within Otter Tail's generation portfolio  
11 makes the fuel storage project unnecessary or unwarranted.  
12

13 Q. WHAT ARE THE CONCERNS ABOUT RELIABILITY TO WHICH YOU REFER?

14 A. Following Winter Storm Uri there have been increasing calls for generation owners  
15 to ensure their systems can respond to extreme events. The increasing frequency  
16 of these disruptive events was recently noted by FERC's acting chair, Willie  
17 Phillips, who commented that Winter Storm Elliot was the fifth major winter storm  
18 event in the past 11 years. Chair Phillips urged plant owners to take prompt action  
19 to avoid power disruptions caused by future disruptive weather events.<sup>1</sup> Also  
20 noteworthy is the Midwest Reliability Organization's 2023 Regional Risk  
21 Assessment identified "Generation Unavailability During Extreme Cold Weather"  
22 as one of eight of the highest risks to reliability, noting that "extreme weather  
23 continues to cause generation resource outages, limiting energy supply at the same  
24 time as demand increases."<sup>2</sup>  
25

26 Q. HAS MISO DEFINED RELIABILITY?

27 A. MISO does not have a concise definition of reliability. Instead, it has identified six  
28 key reliability attributes as necessary for system reliability. Mr. Heidell  
29 acknowledges those attributes on page 18 of his Direct Testimony.  
30

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<sup>1</sup> FERC Chair Phillips made these comments at FERC June 15, 2023, Open Meeting which addressed FERC's review of Winter Storm Elliot. <https://ferc.gov/news-events/events/june-15-2023-open-meeting-06152023> Media summaries of FERC's open meeting include "FERC chair to power plant owners: Act now to protect grid" Energy Wire, June 16, 2023. Chair Phillips comments urged generation owners to adopt NERC cold weather preparedness recommendations.

<sup>2</sup> 2023 MRO Regional Risk Assessment, February 2023, p. 4.

1 Q. WHAT ARE THOSE ATTRIBUTES?

2 A. Availability, fuel assurance, ramping capability, long duration energy at high  
3 output, rapid start-up, and voltage stability.<sup>3</sup>  
4

5 Q. HOW DO THESE ATTRIBUTES RELATE TO LNG FUEL STORAGE AT ASTORIA  
6 STATION?

7 A. LNG-fuel storage at Astoria Station supports the reliability attribute of fuel  
8 assurance by ensuring that fuel will be available when needed regardless of  
9 interruptions to the pipeline. Specifically, Otter Tail's on-site fuel storage proposal  
10 would enable Otter Tail to store up to a five-day supply of LNG on-site at Astoria  
11 Station. This on-site LNG fuel inventory would be available for use in lieu of  
12 pipeline-delivered gas in case of supply disruptions.  
13

14 Q. IS THERE ANY ORDER OF IMPORTANCE AMONG THESE ATTRIBUTES?

15 A. I don't believe MISO has assigned any ordering of importance. That said, the lack  
16 of an assured fuel supply makes it difficult to maintain the other attributes  
17 identified by MISO.  
18

19 Q. HAS MISO DEFINED FUEL ASSURANCE?

20 A. MISO has not formally defined fuel assurance, but the North American Reliability  
21 Corporation (NERC) Reliability Guidelines describe fuel assurance as "proactively  
22 taking steps to identify fuel arrangements or other alternatives that would provide  
23 confidence such that fuel interruptions are minimized to maintain reliable BPS  
24 performance during both normal operations and credible disruptive events."<sup>4</sup>  
25

26 Q. HAS NERC PROVIDED ANY GUIDANCE TO GENERATION OWNERS TO  
27 PROMOTE FUEL ASSURANCE?

28 A. Yes. NERC has provided the following guidance:

29           Generator owners/operators should seek reliable delivery solutions  
30           from both a transportation and commodity perspective. Monitor  
31           and evaluate risks associated with varying levels of transportation

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<sup>3</sup> See *System Attributes Stakeholder Workshop*, September 21, 2022, RASC-2202-1; *Identification of Sufficient System Reliability Attributes*, MISO Resource Adequacy Subcommittee, RASC-2022-1, January 18, 2023.

<sup>4</sup> NERC Reliability Guideline, Fuel Assurance and Fuel Related Reliability Risk Analysis for the Bulk Power System, March 2020, p. 1.

1 or delivery options associated with the different types of  
2 transportation (e.g., interruptible transportation, firm  
3 transportation). Consider and evaluate a diverse portfolio of  
4 products that can be utilized to deliver fuel both reliably and cost-  
5 effectively; examples of these are as follows:

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

16 Generator owners/operators should consider credible fuel-related  
17 contingencies that impact their facilities and provide fuel-related  
18 facility outage concerns as necessary to the reliability authority.  
19 Lastly, where fuel delivery constraints are routinely evident,  
20 generator owners/operators should consider and investigate  
21 whether new options for fuel deliveries to a specific facility or their  
22 fleet are available.<sup>5</sup>

23  
24 Q. HOW HAS OTTER TAIL FOLLOWED RELIABILITY GUIDANCE AS IT  
25 RELATES TO ASTORIA STATION?

26 A. We have examined ways to ensure the plant has fuel when it needs it. Mr. Retzlaff  
27 has testified to the various hedging and related financial instruments we have  
28 examined, but these instruments do not ensure the physical availability of natural  
29 gas when it is needed. As we have noted in this proceeding fuel storage is the most  
30 practical and cost-efficient means to address the risk of disruptions in Astoria  
31 Station's fuel supply.  
32

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<sup>5</sup> Id. pp. 2-3.

- 1 Q. ISN'T THE PIPELINE SERVING ASTORIA STATION RELIABLE?  
2 A. Yes, as we have indicated before the natural gas pipeline service Astoria Station is  
3 reliable, but it is not immune to disruptions. This was demonstrated most recently  
4 during Winter Storm Elliot. Other natural gas pipelines have suffered disruptions,  
5 as was seen in Winter Storm Uri.  
6
- 7 Q. HAS THIS RISK BEEN NOTED BY OTHERS.  
8 A. Yes. A study recently prepared by the University of North Dakota Energy &  
9 Environmental Research Center noted the following:  
10 A potential weakness to the North Dakota generation fleet is the  
11 supply of natural gas to combustion turbine generation facilities.  
12 The primary source of fuel for these units is the Northern Border  
13 pipeline. The pipeline imports Canadian and Bakken produced  
14 natural gas. Natural gas-fired combustion turbines do not store  
15 fuel on-site. Therefore, the reliability of this fuel source should be  
16 considered as part of generation resource availability.<sup>6</sup>  
17
- 18 Q. HAVE YOU SPOKEN TO FUEL ASSURANCE IN YOUR DIRECT TESTIMONY?  
19 A. Yes, but not necessarily labeled as such. My Direct Testimony expressed the  
20 concept of fuel assurance through a resiliency analysis, explaining fuel source  
21 reliability or assurance supports resilient generation, and that a generation facility  
22 has a more reliable fuel supply when fuel is available on-site, when on-site fuel  
23 storage is possible or there is more than one reasonable means for fuel delivery.<sup>7</sup>  
24
- 25 Q. WHY SHOULD OTTER TAIL ADD FUEL STORAGE AT ASTORIA STATION  
26 GIVEN OTTER TAIL'S PLANNING RESERVE MARGIN AND CURRENT FUEL  
27 ASSURED GENERATION?  
28 A. The addition of fuel storage at Astoria Station addresses potential future changes  
29 as the MISO generation fleet transitions. Otter Tail currently has adequate  
30 accredited resources today to meet its planning reserve margin established by  
31 MISO to ensure a loss of load expectation of one day in ten years. Current MISO  
32 rules do not require fuel assurance to receive capacity credit, but this is something

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<sup>6</sup> 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.

<sup>7</sup> Jensen Direct at 8.

1 that will increase in value as the overall MISO fleet continues to transition away  
2 from dispatchable, fuel assured, baseload units to intermittent resources.  
3 Although currently not required by MISO, we believe investing in fuel assurance at  
4 Astoria will not only provide immediate and direct reliability benefits to our  
5 customers and MISO as a whole, but it will also hedge ourselves against potential  
6 accreditation changes in the future for a unit that is roughly 25 percent of our  
7 overall accredited resource fleet.

8  
9 Q. CAN YOU ADDRESS MISO'S CURRENT TREATMENT OF ACCREDITATION  
10 FOR FUEL ASSURED RESOURCES?

11 A. Current rules do not directly require fuel assurance to receive capacity credit, but  
12 the recent changes MISO has made to accreditation certainly incentivizes  
13 generation resource owners to maintain availability during extreme events. MISO  
14 bases 80 percent of a resource's accreditation on its availability during "Tier 2"  
15 hours, which are hours where the amount of excess generation across MISO is  
16 limited, usually coinciding with extreme weather events. If a resource is forced to  
17 go on outage due to fuel unavailability and misses a large number of these Tier 2  
18 hours, this will result in a reduction in capacity credit for that resource over the  
19 next three years.

20  
21 Q. DOES THIS SUPPORT THE ADDITION OF FUEL STORAGE AT ASTORIA  
22 STATION?

23 A. Yes, MISO's accreditation emphasis on availability during Tier 2 hours supports  
24 on-site fuel storage.

#### 25 **IV. CONCLUSION**

26 Q. PLEASE SUMMARIZE THE KEY POINT OF YOUR TESTIMONY.

27 A. My Rebuttal Testimony addresses the issue of reliability and its relationship with  
28 fuel assurance. I noted reliability concerns raised by officials with responsibility  
29 for the bulk transmission system and the need for generation owners to address  
30 reliability during extreme weather events. I described recommendation from  
31 NERC on how to improve reliability of generation plants, which include steps to  
32 ensure an adequate fuel supply. I also note that a recent study for the North Dakota  
33 Transmission Authority identified lack of stored fuel at natural gas combustion

1 turbines as a potential reliability weakness. Finally I describe why fuel storage at  
2 Astoria Sation is a valuable reliability improvement even when our current  
3 planning reserve margin and fuel assured generation provide significant reliability  
4 levels for our customers and the MISO system.

5

6 Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

7 A. Yes, it does.

