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-

Exhibit___

ASTORIA STATION PROJECT

Direct Testimony

BRADLEY E. TOLLERSON

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

February 8, 2023

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I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND TITLE.

A. My name is Bradley E. Tollerson, and I am the Vice President of Energy Supply for Otter Tail Power Company (Otter Tail or the Company.)

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I have a Bachelor of Science degree in Electrical Engineering and a Master's degree in Business Administration from North Dakota State University. I have worked for Otter Tail for over 25 years in various positions, including as an Electrical Engineer, Senior Project Engineer, Manager of Power Services, Director of Power Services and Resource Planning, and Vice President, Planning and Strategy. I have served in my current position as Vice President of Energy Supply since October of 2017.

II. PURPOSE AND OVERVIEW OF DIRECT TESTIMONY

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

A. The purpose of my testimony is to provide support for Otter Tail's request for an Advance Determination of Prudence (ADP) for the Company's proposed development of onsite liquefied natural gas fuel storage at Astoria Station (the Project.) In my testimony, I discuss the following:

- A description of the Project including its schedule and cost;
- The need and justification for the Project; and
- The prudence of the Project.

I introduce the other witnesses testifying on behalf of the Company. Additionally, I sponsor the Company's ADP Application and am available to answer questions regarding the Application.

III. PROJECT DESCRIPTION

Q. PLEASE DESCRIBE ASTORIA STATION.

A. Astoria Station is Otter Tail's 250 MW natural gas-fired, frame type simple cycle, combustion turbine near the small town of Astoria in Deuel County, South Dakota, approximately 25 miles northeast of Brookings, South Dakota. Astoria Station was placed into commercial service in 2021. It was constructed to replace

the capacity and dispatchable attributes of Otter Tail's Hoot Lake coal-fired generating plant, which Otter Tail retired in 2021. Astoria Station is fueled by natural gas provided by the Northern Board Pipeline.

Q. PLEASE DESCRIBE THE PROJECT.

A. Otter Tail proposes adding an onsite fuel inventory system at Astoria Station utilizing liquefied natural gas (LNG.) The Project will provide Astoria Station an LNG storage tank and the required pumps and vaporizers to convert the liquid to a gas. The vaporized gas will be delivered to the turbine via the same onsite route as pipeline natural gas. Since vaporized LNG is like pipeline natural gas, combustion turbine modifications will not be required, and combustion turbine operation will remain the same. Mr. Kirk A. Phinney provides a more detailed summary of the Project in his Direct Testimony.

Q. WHY IS OTTER TAIL PROPOSING TO ADD AN ONSITE FUEL INVENTORY SYTEM AT ASTORIA STATION?

A. Astoria Station currently functions well in replacing the capacity lost when Otter Tail's Hoot Lake generation plant retired in May 2021, but its dependency on just-in-time delivered fuel from the Northern Border Pipeline limits its ability to serve as a dispatchable hedge against energy market disruptions. Further, the addition of onsite fuel storage significantly enhances Astoria Station's ability to provide resilient generation during extreme events when pipeline-sourced natural gas may not be available at any price, which protects our customers from service disruptions at the worst times, such as extreme cold and blizzard like conditions. The now-retired Hoot Lake plant had a substantial onsite source of fuel (i.e., the coal stockpile, upon which it could operate for approximately 30 days), and this attribute was lost upon Hoot Lake's retirement.

Q. IS AN ONSITE FUEL INVENTORY SYSTEM INCLUDED IN OTTER TAIL'S PENDING INTERGRATED RESOURCE PLAN BEFORE THE COMMISSION?

A. Yes. Our North Dakota Integrated Resource Plan (IRP) in Case No. PU-21-380 proposed dual fuel capability at Astoria Station with onsite fuel storage. Our initial IRP filing anticipated fuel oil as the secondary fuel source. Since our initial IRP filing on September 1, 2021, we determined that LNG (rather than fuel oil) is the most cost-effective secondary fuel source for Astoria Station. We are now in a position to address onsite fuel inventory in this ADP application.

Q. DOES THE ADP APPLICATION REFERENCE AND INCORPORATE INFORMATION FROM THE INITIAL IRP FILING?

A. Yes. To provide a complete picture we have incorporated portions of our initial IRP filing into this Application. Where appropriate we updated the information provided in our initial IRP filing in this Application.

Q. WILL THE COMMISSION'S ACTION ON THIS ADP APPLICATION PRECLUDE OR DICTATE A PATICULAR OUTCOME ON OTTER TAIL'S PENDING IRP APPLICATON?

A. No. The Commission's action on this Application will not preclude or dictate any action on Otter Tail's pending IRP application. Onsite fuel storage at Astoria Station is not part of the expansion capacity modeling supporting Otter Tail's IRP.

Q. HOW DID OTTER TAIL DETERMINE LNG IS THE MOST ADVANTAGOUS FUEL SOURCE FOR THE PROJECT?

A. As more fully described by Mr. Phinney in his Direct Testimony, Otter Tail engaged well-qualified engineering firms to develop conceptual designs and cost estimates were for a fuel oil project and an LNG project. After the conceptual designs and cost estimates were completed Otter Tail conducted a comparison of the attributes of each fuel, including a net present value comparison to determine which fuel source would have the lowest cost over a 30-year life.

Q. WHAT DID OTTER TAIL'S ANALYSIS INDICATE?

A. As noted by Mr. Phinney, LNG was determined to have a lower cost than fuel oil over a 30-year life using a net present value comparison. Compared to fuel oil, LNG has lower initial capital cost, lower O&M costs, and lower fuel cost. Part of this is the fact that the use of LNG does not require any turbine modifications. In addition to lower overall costs, LNG does not have the emissions, capacity, or operational drawbacks or limitations that have been identified with fuel oil as a secondary fuel.

Q. WHAT IS THE TIMELINE FOR THE PROJECT?

A. The following is planned schedule to complete the project:

Table 1: Construction Schedule.

Activity	Schedule Estimate
Receive Engineering, Procurement & Construction Proposals	July 2023
Receive LNG supply proposals	August 2023
Obtain permits and regulatory approvals	September 2023
Begin construction	March 2024
In-Service	December 2026

Q. WHAT ARE THE ESTIMATED COSTS FOR THE PROJECT?

A. The total cost of Astoria LNG Storage Project is estimated to be **PROTECTED DATA BEGINS… …PROTECTED DATA ENDS]**. Company witness Mr. Phinney provides additional information regarding the cost of the Project in his direct testimony.

Q. DOES OTTER TAIL INTEND TO PROCEED WITH THE PROJECT IF GRANTED AN ADP?

A. Yes, contingent upon the Company securing all other necessary regulatory approvals in South Dakota and Minnesota.

IV. NEED AND JUSTIFICATION FOR THE PROJECT

Q. WHY IS THE PROJECT NEEDED?

A. LNG storage at Astoria Station will protect our customers from extreme events and market volatility. Specifically, adding LNG storage capability at Astoria Station significantly enhances the amount of resilient generation in Otter Tail's generation portfolio. Resilient generation provided by onsite LNG storage reduces the amount of market energy exposure faced by our customers and mitigates natural gas price volatility. The net benefits to be derived from onsite LNG fuel inventory at Astoria Station are substantial when considering the past and the future potential for extreme, market-changing events.

Q. HAS OTTER TAIL CONDUCTED AN ANALYSIS OF THE NEED FOR RESILIENT GENERATION?

A. Yes, in our initial IRP filing we included detailed analysis of resilient generation attributes of our generation portfolio, which we updated and incorporated into in

this ADP Application. This analysis incorporates a comparison of our forecasted annual load and the amount of resilient generation available to cover that load.

Q. WHAT DOES THE ANALYSIS INDICATE?

A. The analysis demonstrates the importance of resilient generation and that the addition of onsite fuel storage at Astoria Station will significantly increase the amount of resilience, i.e. reliable generation available for our customers during extreme events. Specifically, with the addition of onsite fuel storage at Astoria Station in 2026, nearly 100 percent of our forecasted load will be covered by resilient generation. Mr. Nathan R. Jensen discusses this in his Direct Testimony.

Q, HAS OTTER TAIL ASSESSED HOW ONSITE FUEL STORAGE AT ASTORIA STATION WILL MITIGATE NATURAL GAS MARKET VOLITLITY?

A. Yes. Mr. Ryan D. Retzlaff discusses our analysis of historic natural gas price, locational marginal pricing (LMP) scenarios, and an assessment on the frequency of past and future extreme events in his Direct Testimony.

Q. WHAT DOES OTTER TAIL'S ANALYSIS INDICATE?

A. As further detailed by Mr. Retzlaff's Direct Testimony, our analysis indicates that there are substantial net benefits to be derived from onsite LNG fuel storage at Astoria Station.

Q. WHY NOT SIMPLY RELY ON THE NORTHERN BORDER PIPELINE RATHER THAN INVEST IN ONSITE FUEL STORAGE?

A. The Northern Border Pipeline is very reliable and Astoria Station's location on the pipeline is advantageous. Astoria Station was designed and constructed with those attributes in mind. That said, natural gas pipelines can experience disruptions in service during extreme events. Having onsite fuel storage capability will provide Otter Tail the ability to mitigate this risk for the benefit of our customers.

Q. ARE YOU AWARE OF ANY INSTANCES WHERE EXTREME EVENTS HAVE DISRUPTED PIPELINE SERVICE RESUTLING IN VOLITILE MARKET CONDITIONS OR ELECTRIC SERVICE DISRUPTIONS?

A. Yes. Our analysis incorporates data on the impacts of Winter Storm Uri in 2021, affecting the Southwest Power Pool (SPP) and Electric Reliability Council of

Texas (ERCOT.) Winter Storm Uri illustrated that market disruptions can have catastrophic reliability and economic consequences.

Q. HAS THERE BEEN ANY EXTREME EVENTS AFFECTING ELECTRIC SERVICE SINCE WINTER STORM URI?

A. Yes. Winter Storm Elliot, which occurred from December 21, 2022, to December 26, 2022, had significant impacts on Astoria Station. That event caused or contributed to a forced outage at Astoria Station due to lack of fuel available on Northern Border Pipeline and significant natural gas market volatility. Mr. Retzlaff discusses Winter Storm Elliott and its impacts in his Direct Testimony.

Q. IS THERE ANY BASIS TO THINK THE PROPENSITY FOR EXTREME EVENTS WILL BE GREATER IN THE FUTURE?

A. Yes. The North American Electric Reliability Corporation's (NERC) 2022-2023 Winter Reliability Assessment (Winter Assessment) Issued November 2022 highlighted the increased risk of extreme weather events. Also, we have seen the impacts of Winter Storm Uri and Winter Storm Elliot occur within 22 months of each other, all of which suggest propensity of these events may increase in the future.

Q. DOES OTTER TAIL'S PROPOSED PROJECT TAKE INTO ACCOUNT THE PAST AND FUTURE FREQUENCY OF EVENTS?

A. Yes. The Project directly addresses and mitigates the threat caused by extreme events, which are likely to occur with more regularity in the future per NERC's Winter Assessment. We have seen two such events over the last 22 months.

V. PRUDENCE OF THE PROJECT

Q. IS THE PROJECT A PRUDENT RESOURCE ADDITION?

A. Yes. Onsite LNG fuel storage will mitigate fuel supply and fuel price risks, and it will provide reliability and rate stability for Otter Tail's North Dakota customers. The Project will increase the amount of resilient generation available to our customers during extreme events. These events will occur in the future. Recent events, including Winter Storms Uri and Elliot demonstrate the value of onsite fuel storage.

Q. IS THE COMPANY FIT, WILLING, AND ABLE TO ASSUME OWNERSHIP AND OPERATE THE PROJECT?

A. Yes.

VI. PRESENTATION OF WITNESSES

Q. WHO ARE THE OTHER WITNESSES FOR THE COMPANY IN THIS PROCEEDING?

A. In addition to my policy testimony, the Company sponsors the following witnesses:

- **Kirk A. Phinney** describes the Project and associated facilities, the Company's approach to developing and managing the Project, and the Project's schedule and estimated cost.

- **Nathan R. Jensen** address justification and need for the project in terms of Otter Tail's analysis of resilient generation attributes and Otter Tail's resilient generation needs in relation to forecasted load.

- **Ryan D. Retzlaff** addresses justification and need for the project based on Otter Tail's analysis of historic natural gas price, LMP pricing scenarios, and an assessment of frequency of past and future extreme events. Mr. Retzlaff also discuss the impact of Winter Storm Elliot on Astoria Station and why that event validates the need for the Project.

VII. CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. The addition of onsite LNG fuel storage at Astoria Station will provide a dispatchable hedge against energy market disruptions. Further, the addition of onsite fuel storage significantly enhances Astoria Station's ability to provide resilient generation during extreme events when pipeline-sourced natural gas may not be available at any price, which protects our customers from service disruptions at the worst times. The net benefits to be derived from onsite LNG fuel inventory at Astoria Station are substantial when considering the past and the future potential for extreme, market-changing events.

Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A. Yes, it does.

STATE OF NORTH DAKOTA
BEFORE THE
PUBLIC SERVICE COMMISSION

Otter Tail Power Company
Advance Prudence –
Astoria Gas Application

Case No. PU-23-

VERIFICATION

STATE OF NORTH DAKOTA)
) ss.
COUNTY OF OTTER TAIL)

BRADLEY E. TOLLERSON, being first duly sworn on oath, deposes and says that he is the Vice President of Energy Supply for Applicant Otter Tail Power Company; that the testimony and schedules submitted in the above-captioned matter under his name were prepared under his direction; and that he knows and verifies the contents thereof, and that the same is true and correct to the best of his knowledge and belief.

Dated this 8 day of February, 2023

Bradley E. Tollerson

Subscribed and sworn to before
me on this 8th day of February, 2023.

Notary Public
My Commission expires 1/31/2026

Valerie J Moxness
NOTARY PUBLIC
MINNESOTA
My Commission Expires Jan 31, 2026