COMMERCE DEPARTMENT

December 30, 2022 **PUBLIC DOCUMENT**

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

RE: **PUBLIC Comments of the Minnesota Department of Commerce, Division of Energy Resources**
Docket No. E017/RP-21-339

Dear Mr. Seuffert:

Attached are the **PUBLIC** comments of the Minnesota Department of Commerce, Division of Energy Resources (Department) in the following matter:

> Supplemental Comments Summarizing Otter Tail's Request for Authority to Commence Development of On-Site Fuel Storage at Astoria Station.

The Petition was filed on November 4, 2022 by:

> Nathan Jensen
> Manager, Resource Planning
> 215 South Cascade Street
> PO Box 496
> Fergus Falls, Minnesota 56538-0496

The Department recommends the Minnesota Public Utilities Commission **approve the dual fuel proposal**. The Department is available to answer any questions the Minnesota Public Utilities Commission may have.

Sincerely,

/s/ Steve Rakow
Analyst Coordinator

SR/ar
Attachment

Before the Minnesota Public Utilities Commission

PUBLIC Comments of the Minnesota Department of Commerce Division of Energy Resources

Docket No. E017/RP-21-339

I. INTRODUCTION

On September 1, 2021 Otter Tail Power Company (OTP or the Company) filed the Company's *2022–2036 Integrated Resource Plan* (Petition). The Petition was filed in compliance with the Minnesota Public Utilities Commission's (Commission) April 26, 2017 *Order Approving Plan with Modifications and Setting Requirements for Next Resource Plan* (Order) in Docket No. E017/RP-16-386.[1] The Petition proposed a five-year action plan, including the installation of dual fuel capability at OTP's Astoria Station (Astoria).

On October 14, 2022 OTP filed a letter requesting the Commission bifurcate the procedural schedule to allow the Company to revise the resource plan modeling and provide any necessary updates in March 2023 and not apply the proposed amended procedural schedule to that part of the Petition concerning installing dual fuel capability at Astoria.

On November 1, 2022 the Commission issued a Notice adopting OTP's proposal to bifurcate the Petition.

On November 4, 2022 the Company's *Supplemental Comments Summarizing Otter Tail's Request for Authority to Commence Development of On-Site Fuel Storage at Astoria Station* (Revised Proposal) revised the proposal to install dual fuel capability at Astoria.

Below are the comments of the Minnesota Department of Commerce (Department) regarding the Revised Proposal.

II. DEPARTMENT ANALYSIS

A. APPLICABLE STATUTES AND RULES

The Commission's integrated resource planning (IRP) process is governed by Minnesota Statutes § 216B.2422 which states in part:

> Subd 1. Definitions. (a) For purposes of this section, the terms defined in this subdivision have the meanings given them.
> …

[1] The original due date was later extended by Commission orders issued December 13, 2018 and December 30, 2019 in Docket No. E017/RP-16-386.

(c) "Renewable energy" means electricity generated through use of any of the following resources:

(1) wind;

(2) solar;

(3) geothermal;

(4) hydro;

(5) trees or other vegetation;

(6) landfill gas; or

(7) predominantly organic components of wastewater effluent, sludge, or related by-products from publicly owned treatment works, but not including incineration of wastewater sludge.

(d) "Resource plan" means a set of resource options that a utility could use to meet the service needs of its customers over a forecast period, including an explanation of the supply and demand circumstances under which, and the extent to which, each resource option would be used to meet those service needs. These resource options include using, refurbishing, and constructing utility plant and equipment, buying power generated by other entities, controlling customer loads, and implementing customer energy conservation.

Subd. 2. Resource plan filing and approval. (a) A utility shall file a resource plan with the Commission periodically in accordance with rules adopted by the Commission. The Commission shall approve, reject, or modify the plan of a public utility, as defined in section 216B.02, Subdivision 4, consistent with the public interest.

…

(c) As a part of its resource plan filing, a utility shall include the least cost plan for meeting 50 and 75 percent of all energy needs from both new and refurbished generating facilities through a combination of conservation and renewable energy resources.

> Subd. 3. Environmental costs. (a) The Commission shall, to the extent practicable, quantify and establish a range of environmental costs associated with each method of electricity generation. A utility shall use the values established by the Commission in conjunction with other external factors, including socioeconomic costs, when evaluating and selecting resource options in all proceedings before the Commission, including resource plan and certificate of need proceedings.
>
> …
>
> Subd. 4. Preference for renewable energy facility. The Commission shall not approve a new or refurbished nonrenewable energy facility in an integrated resource plan or a certificate of need, pursuant to section 216B.243, nor shall the Commission allow rate recovery pursuant to section 216B.16 for such a nonrenewable energy facility, unless the utility has demonstrated that a renewable energy facility is not in the public interest. When making the public interest determination, the Commission must consider:
>
> 1) whether the resource plan helps the utility achieve the greenhouse gas reduction goals under section 216H.02, the renewable energy standard under section 216B.1691, or the solar energy standard under section 216B.1691, Subdivision 2f;
> 2) impacts on local and regional grid reliability;
> 3) utility and ratepayer impacts resulting from the intermittent nature of renewable energy facilities, including but not limited to the costs of purchasing wholesale electricity in the market and the costs of providing ancillary services; and
> 4) utility and ratepayer impacts resulting from reduced exposure to fuel price volatility, changes in transmission costs, portfolio diversification, and environmental compliance costs.

The Commission's IRP process is also governed by Minnesota Rules 7843. The decision criteria are provided in Minnesota Rules 7843.0500 which states, in part:

> Subp. 3. Factors to consider. In issuing its findings of fact and conclusions, the Commission shall consider the characteristics of the available resource options and of the proposed plan as a whole. Resource options and resource plans must be evaluated on their ability to:
>
> A. maintain or improve the adequacy and reliability of utility service;
> B. keep the customers' bills and the utility's rates as low as practicable, given regulatory and other constraints;

C. minimize adverse socioeconomic effects and adverse effects upon the environment;
D. enhance the utility's ability to respond to changes in the financial, social, and technological factors affecting its operations; and
E. limit the risk of adverse effects on the utility and its customers from financial, social, and technological factors that the utility cannot control.

In summary, the Commission evaluates a proposed IRP based upon its ability to create a reliable, low cost, low environmental and socioeconomic impact system that manages risk. In weighing these factors, the Commission considers the statutory preference for renewable energy facilities. As indicated in the Petition's Appendix A, there are numerous other statutes, rules, and Commission orders which impact the decision in resource plan proceedings.

B. OTP'S PROPOSAL

OTP's Astoria Station (Astoria) is a 245 MW summer, 285 MW winter natural gas-fueled combustion turbine. Astoria was commissioned in 2021 with a 35-year assumed life. In the Petition OTP proposed to use fuel oil at Astoria as a secondary fuel, in the Revised Proposal OTP states that the Company's:

> analysis shows the most cost-effective secondary fuel source for Astoria Station is most likely liquified natural gas (LNG.) This is based on LNG having lower initial capital cost, lower O&M costs, and lower fuel cost as compared to fuel oil. 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 source.

OTP's preferred plan anticipates 2026 commercial operation of dual fuel at Astoria Station. The Company's current cost estimate for converting Astoria to dual fuel using **[TRADE SECRET DATA HAS BEEN EXCISED] For** reference, the current estimated cost to convert Astoria to dual fuel using **[TRADE SECRET DATA HAS BEEN EXCISED]**.

C. INCLUSION IN IRP

Minnesota Statutes § 216B.2422 Subd. 1 (d) defines a resource plan as meaning "a set of resource options that a utility could use to meet the service needs of its customers over a forecast period … These resource options include using, refurbishing, and constructing utility plant and equipment." Therefore, the Department concludes that OTP's proposal to refurbish Astoria can be included in the Company's resource plan under Minnesota Statutes.

D. 50 AND 75 PERCENT RENEWABLE PLANS

Minnesota Statutes § 216B.2422 Subd. 2 (c) requires the utility to include the least cost plan for meeting 50 and 75 percent of all energy needs from both new and refurbished generating facilities through a combination of conservation and renewable energy resources. Table 3-4 of the Petition shows that, outside of refurbishing Astoria, OTP's proposed plan recommended adding only new renewable resources. At this time OTP is in the process of reviewing the Company's proposed plan and will file a revision next spring. However, the minimal increase in energy output caused by refurbishing Astoria is unlikely to impact the least cost plan for meeting 50 and 75 percent through renewable resources in a meaningful way. Therefore, the Department did not consider this issue further.

E. ENVIRONMENTAL COSTS

Minnesota Statutes § 216B.2422 Subd. 3 requires utilities to use the environmental cost values established by the Commission in conjunction with other external factors, including socioeconomic costs, when evaluating and selecting resource options in all proceedings before the Commission. Given the size of the annual financial costs involved, the infrequent and unpredictable nature of dispatch using LNG at Astoria, and the fact that the marginal fuel displaced by increased (LNG-fueled) generation at Astoria is likely to be natural gas or fuel oil burned at a peaking unit, the Department did not pursue calculating environmental cost impacts for this analysis. Such costs would be too small to impact the analysis in a meaningful manner.[2]

F. RENEWABLE PREFERENCE

Minnesota Statutes § 216B.2422 Subd. 4 requires the utility to demonstrate that a renewable energy facility is not in the public interest.

Of the seven resources defined as renewable by Minnesota Statutes § 216B.2422 Subd. 1 (c) only hydro in a pumped storage or ponded configuration would be able to provide services similar to OTP's plan to refurbish Astoria. The Department is not aware of any undeveloped hydro sites of substantial size in or near OTP's service territory. Therefore, the Department concludes that renewable resources will be unable to provide similar services. In any event, vendors with alternative projects that meet the definition of renewable can propose a renewable alternative in this proceeding.

[2] For example, if the MISO marginal fuel is assumed to be natural gas, then the emissions impact of refurbishing Astoria would be the assumed difference in heat rate between Astoria and the marginal unit, multiplied by the emissions-intensity of natural gas per MMBTU. Using a natural gas CO_2 intensity of 117 pounds per MMBTU and a 1,000 MBTU per MWh difference in heat rate results in a difference in CO_2 emissions of 0.0585 tons per MWh:

$$117\left(\frac{lbs}{MMBTU}\right) * 1{,}000\left(\frac{MBTU}{MWh}\right) \div 2{,}000\left(\frac{lbs}{ton}\right) \div 1{,}000\left(\frac{MBTU}{MMBTU}\right) = .0585\ ton/MWh$$

Minnesota Statutes § 216B.2422 Subd. 4 lists four criteria the Commission must consider when making the public interest determination. Regarding the first criterion, use of LNG would enable OTP to dispatch Astoria more often, thus displacing energy from the marginal unit in the Midcontinent Independent System Operator, Inc. (MISO) dispatch stack. Given the small size of the increased output at Astoria likely to result from LNG and the fact that Astoria's output is likely to displace generation from similar (MISO-marginal) units, the Department concludes that such displacement would have minimal impact on greenhouse gas reduction and no impact on compliance with the renewable energy standard or the solar energy standard.

Regarding the second criterion, use of LNG would have a positive impact on local and regional grid reliability by enabling Astoria to continue to generate electricity during system emergencies when supplies of natural gas becomes scarce and/or high cost.

Regarding the third criterion, the purpose of refurbishing Astoria is to reduce the costs of purchasing wholesale electricity in the market during extreme events, thus enabling OTP to better manage the cost impacts caused by the intermittent nature of wind and solar resources.

Regarding the fourth criterion, use of LNG will reduce OTP's exposure to natural gas and spot market price volatility.

In summary, the Department concludes that, for purposes of the Revised Proposal, a renewable energy facility is not in the public interest.

G. RULE CRITERIA

Under Minnesota Rules 7843.0500 the Commission must evaluate resource options on their ability to address five factors. Each factor is addressed separately below.

1. Reliability of Service

The first factor listed in Minnesota Rules 7843.0500 is the resource option's ability to maintain or improve the adequacy and reliability of utility service. In the Revised Proposal the Company states that "adding dual fuel capability at Astoria Station substantially increases the level of resilient generation provided by Otter Tail's generation portfolio during all seasons and mitigates natural gas market volatility, to the benefit of customers." OTP identifies three characteristics to help define resilience of generation resources:

1. Dispatchability – A generation resource is dispatchable if it can reasonably be expected to generate when called upon.
2. Reliable Fuel Supply – A generation resource has a more reliable fuel supply when fuel is available onsite, when onsite fuel storage is possible or there is more than one reasonable means for fuel delivery.

3. Energy Price Protection – A generation resource has more energy price protection if the availability and cost of fuel for generation can be managed during volatile market conditions.

The Department agrees with the Company that the main purpose of refurbishing Astoria is to improve the reliability of service through ensuring Astoria's fuel supply in extreme circumstances and creating a hedge against natural gas availability issues and extreme MISO market pricing due to natural gas price spikes. Thus, refurbishing Astoria will improve reliability of electric service, improve reliability of natural gas service by enabling OTP to take Astoria off the natural gas system during extreme events, and mitigate various reliability risks faced by OTP and the region.

Note that OTP's criteria are not reliability criteria applied by MISO at this time. However, MISO's September 21, 2022 *System Attributes Introduction Workshop* MISO indicated a concern with fuel assurance and five other reliability-related concepts. MISO has not yet prioritized the attributes nor provided detailed analysis. However, OTP's proposal should be able to address MISO's concerns related to fuel assurance.[3]

In addition, the Department notes that the North American Electric Reliability Corporation's (NERC) *2022-2023 Winter Reliability Assessment* (Winter Assessment),[4] issued November 2022, highlighted the increased risk of extreme weather events. NERC's concern in the Winter Assessment is that MISO's winter reserve margin dropped from 48% last year to 43% this year—a drop of 5 percentage points. However, NERC's Winter Assessment also shows that the required "normal" reserve margin is about 18%. So, the issue is the trend of declining reserve margins rather than the immediate impact. In addition, NERC may be concerned that extreme weather events are likely to be more common than in the past. OTP's proposal would help ensure reliability during the extreme events of concern to NERC in the Winter Assessment.

2. Customers' Bills

The second factor listed in Minnesota Rules 7843.0500 is the resource option's ability to keep the customers' bills and the utility's rates as low as practicable, given regulatory and other constraints. In Attachment 2 to the supplemental response to Minnesota Office of Attorney General (OAG) Information Request No. 8 (dated November 08, 2022) OTP calculated the annual revenue requirements (capital-related and operations and maintenance) for refurbishing Astoria. The Department then levelized that amount—resulting in a levelized annual revenue requirement of about **[TRADE SECRET DATA HAS BEEN EXCISED]**.

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[3] See MISO's presentation available at: https://cdn.misoenergy.org/20220921%20System%20Attributes%20Workshop%20Presentation626391.pdf
[4] Available at: https://www.nerc.com/pa/RAPA/ra/Reliability Assessments DL/NERC_WRA_2022.pdf

Supplemental Table 3-12 of the Revised Proposal shows how dual fuel capability might have performed financially during February 2021 (Winter Storm Uri). It also shows locational marginal prices (LMP) above those historically experienced during February 2021 such as double historic LMPs, LMPs at the MISO cap, and use of historic Southwest Power Pool (SPP) LMPs at Big Stone, which is near Astoria.

Focusing on the zero percent and 25 percent timely gas purchases rows, use of historic Astoria LMPs results in a net benefit estimate of between $4.7 and $9.0 million attributable to adding LNG capability. From this we can conclude that, for refurbishing Astoria to be justified purely in insurance terms, Winter Storm Uri LMPs would have to happen[5] **[TRADE SECRET DATA HAS BEEN EXCISED]**.

Use of double the historic Astoria LMPs results in a net benefit estimate of between $14.1 and $18.0 million attributable to adding LNG capability. From this we can conclude that, for refurbishing Astoria to be justified purely in insurance terms, LMPs at double the Winter Storm Uri level would have to happen about **[TRADE SECRET DATA HAS BEEN EXCISED]**.

By contrast, use of the MISO LMP price cap ($3,500/MWh) results in a net benefit estimate of between $36.5 and $40.3 million attributable to adding LNG capability. From this we can conclude that, for refurbishing Astoria to be justified purely in insurance terms, LMPs at the MISO LMP price cap would have to happen **[TRADE SECRET DATA HAS BEEN EXCISED]**.

Finally, use of the Historical SPP Big Stone LMPs results in a net benefit estimate of between $26.1 and $28.5 million attributable to adding LNG capability. From this we can conclude that, for refurbishing Astoria to be justified purely in insurance terms, LMPs at the Historical SPP Big Stone level would have to happen **[TRADE SECRET DATA HAS BEEN EXCISED]**.

In summary, refurbishing Astoria is not justified solely based on the economic benefits as calculated by OTP. However, it is not unusual for projects undertaken for reliability purposes to fail a benefit/cost test; that is why reliability standards are treated as a minimum that must be met rather than being a question of cost-effectiveness. The question at hand can be viewed as "is OTP's Revised Proposal sufficiently related to a reliability standard." Considering all of the risks, the Department concludes that the Revised Proposal, while not directly connected to any existing reliability standard, is sufficiently related to reliability and related risks to make an economic test of lesser importance.

[5] The necessary frequency is determined by comparing the levelized annual revenue requirement to the net benefit due to LNG Dual Fuel Integration shown in Supplemental Table 3-12 of each LMP scenario.

3. Socioeconomic and Environmental Impact

The third factor listed in Minnesota Rules 7843.0500 is the resource option's ability to minimize adverse socioeconomic effects and adverse effects upon the environment. Above the Department concluded that the environmental impact (increased generation at Astoria displacing the MISO marginal unit) would be minimal. The Revised Proposal notes that Astoria is part of OTP's plan to transition from the coal-fired Hoot Lake Plant to a combination of Merricourt's wind energy and Astoria's capacity. OTP believes that it is critical that the Company not lose important generation attributes during the transition process. Overall, the proposed dual fuel project's socioeconomic and environment effects appear to be small.

4. Responding to Changes

The fourth factor listed in Minnesota Rules 7843.0500 is the resource option's ability to enhance the utility's ability to respond to changes in the financial, social, and technological factors affecting its operations. Refurbishing Astoria will enhance OTP's ability to respond to changes in the natural gas markets and use natural gas to respond to other changes. However, refurbishing Astoria will have minimal impact on OTP's ability to respond otherwise.

5. Limiting Risk

The fifth factor listed in Minnesota Rules 7843.0500 is the resource option's ability to limit the risk of adverse effects on the utility and its customers from financial, social, and technological factors that the utility cannot control. The main trade off created by refurbishing Astoria is to lock in capital costs now to enable OTP to limit the impact of any risks associated with natural gas price spikes and related reliability issues in the future. OTP's plan is to install a five-day, on-site fuel supply establishes the length of OTP's ability to respond to natural gas price spikes and reliability issues.

III. DEPARTMENT RECOMMENDATION

The Department Recommends the Commission approve OTP's proposal to refurbish Astoria.

CERTIFICATE OF SERVICE

I, Nicole Westling, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

Minnesota Department of Commerce
Comments

Docket No. E017/RP-21-339

Dated this **30th** day of **December 2022**

/s/Nicole Westling

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