STATE OF MINNESOTA Before The Public Utilities Commission

Katie Sieben Joseph Sullivan Valerie Means Matt Schuerger John Tuma Chair Vice-Chair Commissioner Commissioner

In the Matter of Otter Tail Power Company's 2022–2036 Integrated Resource Plan

DOCKET NO. E-017/RP-21-339

COMMENTS OF THE OFFICE OF THE ATTORNEY GENERAL

INTRODUCTION

The Office of the Attorney General—Residential Utilities Division ("OAG") respectfully submits these Comments in response to the Commission's November 28, 2022 Notice of Amended Procedural Schedule regarding Otter Tail Power Company's ("Otter Tail" or "the Company") request for authority to commence development of on-site liquified natural gas ("LNG") fuel storage at its Astoria Station gas-fired peaking plant (the "Dual Fuel proposal").

Otter Tail claims that the ability to operate Astoria on stored LNG would save customers money when pipeline gas and MISO energy market prices spike simultaneously, as occurred during 2021's Winter Storm Uri. However, the purported cost savings are vastly inflated by unreasonable assumptions in the Company's economic analysis. In its more reasonable scenarios, Otter Tail's own analysis shows that the Dual Fuel proposal would have increased costs for customers during Winter Storm Uri. In other words, even if there were a Winter Storm Uri-level event every year for its thirty-year life, the Dual Fuel proposal would still increase costs for Otter Tail's customers.

Accordingly, the Dual Fuel proposal should be rejected. Rather than investing millions of dollars in new fossil fuel infrastructure at Astoria, Otter Tail should explore in its upcoming IRP other investments that could more meaningfully ensure customers' safety during extreme weather.

ANALYSIS

I. THE DUAL FUEL PROPOSAL IS NOT IN THE PUBLIC INTEREST.

A. The Dual Fuel Proposal Is Expensive.

Otter Tail's Dual Fuel proposal would be a major investment into Astoria Station, which has been in service for less than two years. In its supplemental filing, Otter Tail increased its capital cost estimate for the Dual Fuel proposal to **[TRADE SECRET DATA BEGINS...**

...TRADE SECRET DATA ENDS], which is 33 percent higher than originally estimated in its Integrated Resource Plan ("IRP") filing.¹ For comparison, Astoria's full capital cost was \$147.5 million.² In other words, the Dual Fuel proposal would represent a [TRADE SECRET DATA BEGINS... ...TRADE SECRET DATA ENDS] premium over Astoria's initial construction costs, which were approved by the Commission less than a year ago.³

Moreover, the capital cost estimate does not include the additional operations and maintenance, taxes, and return on equity costs that would be collected from customers if the project were approved. Otter Tail estimates that the full revenue requirements for the Dual Fuel proposal—excluding fuel costs—will exceed [TRADE SECRET DATA BEGINS...

...TRADE SECRET DATA ENDS] over the life of the project, including [TRADE SECRET

DATA BEGINS... ... **TRADE SECRET DATA ENDS**] in the first ten years alone.⁴

Finally, this significant fossil fuel investment would not improve Astoria's nameplate capacity, heat rates, or Midcontinent Independent System Operator ("MISO") capacity accreditation. In other words, unlike other possible investments that will be considered in Otter Tail's IRP, adding

¹ Otter Tail's Supplemental Comments at 18 (Nov. 4, 2022) [hereinafter "Dual Fuel Supplement"].

² In the Matter of the Application of Otter Tail Power Company for Authority to Increase Rates for Electric Utility Service in Minnesota, Docket No. E-017/GR-20-719, Direct Testimony and Schedules of Kirk A. Phinney at 4 (Nov. 2, 2020) (eDocket No. 202011-167897-06).

³ Docket No. E-017/GR-20-719, FINDINGS OF FACT, CONCLUSIONS, AND ORDER (Feb. 1, 2022) (eDocket No. <u>20222-182349-01</u>).

⁴ Otter Tail Supplemental Response to OAG IR 8 (Nov. 8, 2022) (eDocket Nos. <u>202211-190495-05</u> (Public) and <u>2025</u> (Public) and <u>2055</u> (Public) and 2055 (Public

dual fuel capability would not provide Resource Adequacy benefits, emissions reductions, or energy savings. Indeed, the potential benefits of the Dual Fuel proposal are limited almost exclusively to the market price hedge discussed below.

B. The Dual Fuel Proposal Would Not Meaningfully Improve Reliability.

Otter Tail states that the Dual Fuel proposal is "squarely aimed at maintaining the adequacy and reliability of service" and that "recent events in SPP and ERCOT have illustrated that market disruptions can have catastrophic reliability and economic consequences."⁵ However, any reliability benefits of the project would be limited to times when pipeline gas is unavailable. As Otter Tail notes, gas transmission lines are very reliable, and even during 2021's Winter Storm Uri—the most dramatic disruption to gas service in recent memory—pipeline gas would have been available at Astoria throughout the event.⁶



Figure 1 Astoria Station's Position on the Northern Border Pipeline

⁵ Dual Fuel Supplement at 20, 1.

⁶ Dual Fuel Supplement at 11.

As shown in the map above, Astoria Station's position on the Northern Border Pipeline is particularly advantageous.⁷ The pipeline is supplied by multiple injection points in both North Dakota and western Canada. Crucially, Astoria Station is located relatively close to these injection points and upstream of load centers in Minnesota, Iowa, and Illinois. Thus, if there were an equipment failure at one of the injection points, or even a region-wide disruption in western Canada or North Dakota, there would still be several other injection points that could supply the pipeline. This enhances the reliability of the pipeline and is one of the reasons why Astoria Station would have retained reliable pipeline gas service throughout Winter Storm Uri.

While Otter Tail acknowledges these facts, it argues that the Dual Fuel proposal would still have provided a hedge against volatile MISO market prices during Winter Storm Uri:

It is important to note that natural gas was always available for Astoria Station during Winter Storm Uri in February 2021. However, while the deliverability of gas was stable, the price for the delivered gas was high. Even if one believes gas deliveries would remain stable in a future event (which cannot be guaranteed, of course), dual fuel capability still mitigates the risk of intraday pricing volatility and overall energy pricing risks that were experienced by some other utilities during the February 2021 event.⁸

In other words, the Dual Fuel proposal's potential benefits are in its market price hedge more

than any meaningful improvement to the reliability of Otter Tail's electric service. Accordingly, the

next four subsections examine the project's potential market price hedge benefits.

C. Otter Tail's Economic Analysis Dramatically Overstates the Dual Fuel Proposal's Potential Cost Savings.

To demonstrate the potential benefits of the Dual Fuel proposal, Otter Tail provided a "back cast" of the cost savings that would have accrued had the project been operational during Winter Storm Uri. Otter Tail claims that dual fuel capability would have provided net benefits of \$4.7 to

⁷ U.S. Energy Info. Admin., <u>Natural Gas Weekly Update</u> (May 13, 2021).

⁸ Dual Fuel Supplement at 16.

\$56.6 million during the event by switching operations to LNG and avoiding expensive pipeline gas purchases.⁹ However, it is important to understand the analysis that produced these figures. When one takes a "look under the hood" of Otter Tail's calculations, it quickly becomes clear that these estimated savings are inflated by unreasonable assumptions.

Figure 2 OTP's Supplemental Table 3-12: February 2021 LMP Pricing Scenario

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
				Gas	Only	LNG Dual Fuel Integration (5 Day Invty)			Net Benefit Delta	
	Timely Gas	Timely								
	Purchase: %	MMBtu	Intraday	Net Benefit:		LNG	Net Benefit:		Net Benefit:	
	of Daily	Purchase	Purchase	Average Gas	Net Benefit:	Dispatch	Average Gas	Net Benefit:	Average Gas	Net Benefit:
LMP Pricing Scenario	Capacity	(MMBTu)	(MMBTu)	Case	Worst Gas Case	(MWh)	Case	Worst Gas Case	Case	Worst Gas Case
	0%	0	70,950	(\$840,795)	(\$5,346,120)	31,350	\$3,862,028	\$3,826,553	\$4,702,823	\$9,172,673
	10%	74,923	(3,973)	(\$2,313,096)	(\$6,226,902)	31,350	\$3,962,974	\$3,892,932	\$6,276,069	\$10,119,834
Historical Astoria	15%	112,385	(41,435)	(\$3,102,458)	(\$7,240,915)	31,350	\$4,013,447	\$3,926,121	\$7,115,905	\$11,167,036
LMPs	25%	187,308	(116,358)	(\$4,943,698)	(\$12,246,128)	31,350	\$4,100,203	\$3,953,336	\$9,043,901	\$16,199,464
	50%	374,616	(303,666)	(\$9,678,766)	(\$25,815,180)	31,350	\$4,256,076	\$3,860,743	\$13,934,842	\$29,675,922
	100%	749,232	(678,282)	(\$19,194,308)	(\$53,047,505)	31,350	\$4,522,414	\$3,581,333	\$23,716,723	\$56,628,838

Otter Tail's "back cast" of Winter Storm Uri operations are summarized in its Supplemental Table 3-12, which is reprinted in Figure 2, above.¹⁰ As shown in columns 9 and 10, Otter Tail claims that dual fuel capability would have provided net benefits of \$4.7 to \$56.6 million during the event compared to pipeline gas. However, just \$3.6 to \$4.5 million of these benefits would have come from the actual operation of Astoria on LNG (columns 7 and 8). The vast majority of the purported benefits come from avoided losses on pipeline gas purchases (columns 4 and 5); these losses are the result of Otter Tail's assumption that it would have purchased large quantities of pipeline gas each day and then sold back the unused gas at significant losses.

Thus, it is important to understand the assumptions underlying Otter Tail's economic analysis regarding operation of Astoria on pipeline gas. Two assumptions are particularly impactful: 1) the percentage of "timely gas purchases" during the event; and 2) the "average" and "worst" gas

⁹ Dual Fuel Supplement at 15 supp. tbl. 3-12. The full calculations underlying the table are included in Attachment 4 to OTP's Supplemental Response to OAG IR 7 (Nov. 8, 2022) (eDocket Nos. <u>202211-190495-03</u> (Public) and <u>202210-1905-05</u> (Public) and <u>20205-05</u> (Public) and <u>20205-05</u> (Public) and <u>20205-05</u> (Publ

¹⁰ See Dual Fuel Supplement at 15. For ease of reference, column labels have been added and the table has been truncated to include only the actual Winter Storm Uri energy market prices.

price scenarios. While the pricing scenarios are fairly intuitive,¹¹ the timely gas purchase percentage requires some explanation. In Otter Tail's analysis, the "timely purchase percentage" does not refer to the pipeline gas purchases made for expected operation of Astoria on the following day, which would be purchased at the "timely" pipeline gas price. Rather, the "timely purchase percentage" refers to the amount of *surplus* purchases that would have been made even if the Company would not expect—based on the information available to it at the time—the plant to be economically dispatched. For example, the "0% timely gas purchase" scenario assumes the Company would have only purchased gas when it expected Astoria to run the next day—i.e., it would have made zero surplus purchases—while the "25% timely gas purchase" scenario assumes Otter Tail would have purchased enough pipeline gas to operate Astoria at maximum output for six hours each day, or 25 percent of the total hours in the study period, with any unused gas sold back at a lower price.

There are two main ways in which Otter Tail's analysis overstates the potential benefits of the Dual Fuel proposal. First, some of the "timely purchase percentage" scenarios include extremely large amounts of pipeline gas purchases. For example, the "100% timely gas purchase" scenario assumes that the Company would have procured enough pipeline gas to run the plant at maximum output for every hour on every day of the study period, *even if the plant was not expected to run*. Second, the analyses also assume that Otter Tail would have sold back this surplus gas at significant losses. In the "average gas case" scenarios, the Company assumes it would be able to sell back only 75 percent of the surplus gas it purchased. In the "worst gas case" scenarios, surplus gas is sold back at the lowest possible price for the day in each day of the study period. Nearly all of the \$0.8 to \$53 million in "net losses" in the "gas only" scenarios listed in columns 4 and 5 of Figure 2 are attributable to these pipeline gas speculation losses.

¹¹ The "average" gas case reflects the average cost of pipeline gas during the day and the "worst" gas case represents the highest pipeline gas price during the day.

To better illustrate the impact of these assumptions, Figure 3 summarizes Otter Tail's economic analysis for one day of one scenario: the "100% Timely Gas Purchase, Worst Gas Case" scenario on February 17, 2021. For background, this was the Wednesday following Presidents' Day weekend, and Otter Tail needed to make its timely purchases for the day by Tuesday afternoon. Pipeline gas prices had been extremely volatile over the weekend, with gas trading as high as

TRADE SECRET DATA BEGINS ...

... TRADE

SECRET DATA ENDS], with an average price of \$189/MMBtu.

Figure 3 OTP "100% Timely Purchase, Worst Gas Case" scenario, February 17, 2021 [TRADE SECRET DATA BEGINS ...

... TRADE SECRET DATA ENDS]

As the figure shows, pipeline gas prices were expected to remain high on Wednesday the 17th: Otter Tail's gas supplier projected the timely gas purchase price would be **[TRADE SECRET DATA BEGINS...** ... **TRADE SECRET DATA ENDS]**, which would mean the

fuel cost to operate Astoria would have been over [TRADE SECRET DATA BEGINS...

...TRADE SECRET DATA ENDS]. MISO day-ahead energy market prices for

the 17th were also abnormally high, but even the peak hourly market price (\$615/MWh) was still several hundred dollars per MWh below Astoria's expected fuel cost.¹² Based on the information available at the time of these hypothetical purchases, it almost certainly would have been imprudent to procure pipeline gas for this day at the quoted price.

Despite this fact, in its "100% timely purchase" scenario, Otter Tail assumes that it would have purchased enough pipeline gas to run the plant at maximum output for the entire day. For February 17th, the "100% Timely Purchase, Worst Gas Case" scenario assumes Otter Tail would have purchased *\$12.8 million* in pipeline gas and then sold this gas back for just *\$750 thousand*. Thus, for this one day—in which Astoria's expected fuel cost was **[TRADE SECRET DATA BEGINS...** ...**TRADE SECRET DATA ENDS]** times higher than the average energy market price—Otter Tail's economic analysis assumes it would have sustained losses of over \$12 million.

In short, the "100% timely gas purchase" scenarios do not reflect reasonable and prudent plant operations and so their results provide little probative value. Similarly, the "worst gas case" scenarios also assume unreasonable (and likely imprudent) actions and, thus, should also be given little to no weight.

D. Xcel Energy's Peaking Plant Operations During Winter Storm Uri Undermine the Assumptions in Otter Tail's Economic Analysis.

Though many of the scenarios in Otter Tail's economic analysis are unreasonable, the analysis does highlight a valid concern: gas procurement strategies for peaking plants can be challenging, especially when making nominations in advance of long weekends. Winter Storm Uri presented a "perfect storm" for peaking plant operators, as volatile gas and energy market prices

¹² Real Time MISO energy market prices were similar to Day Ahead, ranging from \$90.21/MWh to \$638.64/MWh.

coincided with a long holiday weekend. It would have been challenging to operate a peaking plant on pipeline gas under these conditions.

In this context, it is instructive to consider how other peaking plants in the region were operated during the storm. As shown in Figure 4, Xcel Energy operates a number of peaking units in its Upper Midwest system, with some running solely on fuel oil, others fueled solely by pipeline gas, and still others that can operate on either pipeline gas or fuel oil.¹³

Figure 4 Xcel Energy combustion turbine initial operating year and nameplate capacity

Fuel Oi	l only		Dual Fuel (ga	as + fue	el oil)	Gas only			
Blue Lake 1-4	1974	227 MW	Angus Anson 2-3	1994	239 MW	Angus Anson 4	2005	166 MW	
French Island 3-4	1974	158 MW	Inver Hills 1-6	1972	281 MW	Black Dog 6	2018	238 MW	
Wheaton 6	1973	53 MW	Wheaton 1-4	1973	194 MW	Blue Lake 7-8	2005	333 MW	

Figure 5 illustrates how Xcel's peaking plants were operated during the most volatile days of Winter Storm Uri.¹⁴ The blue line represents the combined hourly capacity factor for the plants that have the capability to operate on fuel oil, while the green line represents the plants that can operate solely on pipeline gas. As the figure shows, Xcel's fuel oil-capable units were dispatched sporadically over the period, with nearly all units operating at full capacity during February 15. The units that can only operate on pipeline gas, however, were not dispatched at all during this period.

¹³ Data source: U.S. Energy Information Administration's <u>Form 860</u> for 2021.

¹⁴ Data source: U.S. Environmental Protection Agency's <u>Clean Air Markets Program Data</u>.

Figure 5 Xcel Energy peaking plant operations, February 13-19, 2021



In other words, rather than making large speculative purchases as assumed in Otter Tail's analysis, Xcel simply chose not to operate its plants on pipeline gas during the period of extremely volatile pipeline gas prices. This strategy allowed Xcel to avoid the massive speculative gas price market losses that make up the bulk of the Dual Fuel proposal's alleged benefits.

E. The Dual Fuel Proposal Would Have Increased Customer Bills Even During Winter Storm Uri.

Xcel's peaking plant operations during Winter Storm Uri undermine the assumptions of Otter Tail's economic analysis, especially the scenarios with large amounts (i.e., 25% to 100%) of surplus purchases. Rather than making large surplus purchases, Otter Tail could simply have procured pipeline gas only when it expected Astoria to be dispatched. This approach would avoid the \$2.3 to \$53 million in pipeline gas losses included in Otter Tail's economic analysis.

Crucially, under the more reasonable scenarios included in Otter Tail's analysis, the Dual Fuel proposal would have increased customer costs, even during Winter Storm Uri. In Otter Tail's "average gas cost" case, the net revenues from dual fuel operations were just \$4.7 million in the "0% timely purchase" scenario—i.e., in which Otter Tail would only procure gas when it expected

Astoria to be dispatched—and even the 10% and 15% timely gas purchase scenarios showed net revenues of \$6.3 and \$7.1 million, respectively. These amounts are smaller than the proposal's annual revenue requirements, which Otter Tail estimates will average **[TRADE SECRET DATA**]

BEGINS... ... **TRADE SECRET DATA ENDS**] over project life.

In other words, even during Winter Storm Uri—which was, by far, the most extreme natural gas pricing event in the last decade—the Dual Fuel proposal would have increased costs for customers under the more reasonable scenarios in Otter Tail's economic analysis. Put another way, even if there were a Winter Storm Uri-level pricing event *every year for the next thirty years*, the Dual Fuel proposal would still increase costs for customers.

F. Dual Fuel Capability Would Be Used Very Rarely.

Winter Storm Uri was an extreme event for both pipeline gas and MISO energy market prices. When considering the potential market pricing hedge benefits of the Dual Fuel proposal, it is important to consider not just how the project would operate during extreme events, but also the expected frequency of extreme events. Extending Otter Tail's "back cast" to additional historical years shows that dual fuel capability would have been used very rarely.

Otter Tail's Supplemental Figure 3-11 details daily pipeline gas prices over the last 14 years. Figure 6 replicates this chart with the addition of an estimated LNG price to illustrate how often Dual Fuel capability would have been used if the proposal had operated over this time.¹⁵

¹⁵ Compiled using data from Attachment 3 to Otter Tail's Supplemental Response to OAG IR 7 (Nov. 8, 2022) (eDocket No. <u>202211-190495-03</u>).

Figure 6 Historic Ventura Hub Pipeline Gas and Estimated LNG Price



As the figure shows, LNG capability would have been utilized in very few days over the last fourteen years: the estimated LNG price was lower than the pipeline gas cost in just 29 of 5,020 days over this span, or less than one percent of the time. Further, in several of these days MISO market prices were relatively low, meaning Astoria would *not* have been dispatched on LNG even though LNG was below the pipeline gas cost.

The OAG estimates that, had Astoria Station been in service with dual fuel capability over these years, it would have been economically dispatched on LNG in just 190 hours (or roughly eight days), 110 of which would have been during Winter Storm Uri. Over these 190 hours of LNG operation, the Dual Fuel proposal would have accrued approximately \$5.5 million in net revenues from MISO energy market sales. Over the same period, the revenue requirements of the Dual Fuel proposal would have totaled **[TRADE SECRET DATA BEGINS ...** ... **TRADE**

SECRET DATA ENDS], which means that on net the Dual Fuel proposal would have increased costs for customers by well over \$100 million dollars over this period.

G. The Dual Fuel Proposal Should Be Rejected.

In conclusion, the Dual Fuel proposal would be a significant capital investment into a plant that is less than two years old. Based on historical experience, dual fuel capability would be rarely used, and the proposal's revenue requirements will likely far exceed its potential benefits. Moreover,

when unreasonable scenarios are excluded, Otter Tail's economic analysis shows that the proposal would increase costs even if there were a Winter Storm Uri-level pricing event every year for the next thirty years. In short, the Dual Fuel proposal is not in the public interest and should be rejected.

II. OTTER TAIL SHOULD EXPLORE ALTERNATIVES TO THE DUAL FUEL PROPOSAL IN ITS INTEGRATED RESOURCE PLAN.

Despite opposing the Dual Fuel proposal, the OAG applauds Otter Tail's focus on improving the reliability of its electric service. Winter Storm Uri underscored the importance of electricity to our society. Not only is electricity essential to a functioning economy, power outages can be deadly during extreme weather: Winter Storm Uri caused nearly 250 deaths in Texas alone.¹⁶ Electricity is not a luxury, it is essential to ensure that Minnesotans can live with dignity, safety, and respect.

Rather than investing millions of dollars in new fossil fuel infrastructure at Astoria, Otter Tail should explore in its upcoming IRP other investments that could more meaningfully ensure customers' safety. In particular, investments in energy efficiency and weatherization are more attractive than ever in light of the significant rebates and tax credits included in the recently passed Inflation Reduction Act.¹⁷ Widespread home weatherization will significantly reduce energy usage and peak demand—benefits that are absent from the Dual Fuel proposal—while also reducing customers' energy costs. Moreover, improvements to building envelopes—e.g., insulation, air sealing, and window replacement—will also help homes maintain safe temperatures during (inevitable) power outages. This approach would much more meaningfully improve customers' safety and resilience, all while lowering bills and reducing Otter Tail's peak demand.

¹⁶ Patrick Svitek, <u>Texas Puts Final Estimate of Winter Storm Death Toll at 246</u>, TEXAS TRIBUNE, Jan 2, 2022.

¹⁷ See, e.g., Laura Benshoff, *Three Ways the Inflation Reduction Act Would Pay You to Help Fight Climate Change*, NATIONAL PUBLIC RADIO, Aug. 13, 2022.

CONCLUSION AND RECOMMENDATION

The Dual Fuel proposal would provide minimal reliability benefits, and dual fuel capability will likely be used very rarely. The proposal's revenue requirements will likely far exceed its potential benefits. Indeed, Otter Tail's own economic analysis suggests that the Dual Fuel proposal would increase costs for customers even if there were a Winter Storm Uri-level pricing event in every year of the project life. Accordingly, the Dual Fuel proposal is not in the public interest and should be rejected.

Dated: December 30, 2022

Respectfully submitted,

KEITH ELLISON Attorney General State of Minnesota

/s/ Andrew Twite ANDREW TWITE Rates Analyst

/s/ Peter G. Scholtz

PETER G. SCHOLTZ Assistant Attorney General Atty. Reg. No. 0389936

445 Minnesota Street, Suite 1400 St. Paul, Minnesota 55101-2131 (651) 757-1473 (Voice) (651) 296-9663 (Fax) peter.scholtz@ag.state.mn.us

ATTORNEYS FOR OFFICE OF THE ATTORNEY GENERAL— RESIDENTIAL UTILITIES DIVISION