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

Surrebuttal Testimony

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I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND EMPLOYER.

A. My name is Ryan D. Retzlaff. I am employed by Otter Tail Power Company (Otter Tail or Company) as its Manager of Power Services.

Q. PLEASE SUMMARIZE YOUR CURRENT RESPONSIBILITIES.

A. The primary responsibility of Power Services is to implement wholesale energy market strategies that optimize Otter Tail's generation resources with other resource alternatives to meet customer needs in a low-cost, reliable manner, all while maintaining an appropriate level of risk tolerance. I oversee the Company's wholesale energy market functions, including daily submission of generation offers and load bids, procurement of natural gas fuel for our generation resources, oversight of the Company's Auction Revenue Rights and Financial Transmission Rights portfolios, procurement of forward energy, capacity, and natural gas contracts, and accounting of wholesale energy market financial settlements.

II. PURPOSE AND OVERVIEW OF SURREBUTTAL TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to rebut various portions of Mr. Heidell's surrebuttal testimony while also providing additional context. I discuss risk mitigation options for intraday pricing risk. I explain why Mr. Heidell's critique of Otter Tail's Winter Storm Uri economic analysis is faulty due to a presumption of perfect, after the fact, knowledge while discounting upward pricing indicators. Finally, I discuss the value and limitations associated with aligning the daily natural gas and electric schedules.

Q. DO YOU AGREE WITH MR. HEIDELL THAT THERE ARE OTHER WAYS, OTHER THAN ONSITE FUEL STORAGE, TO MANAGE "GAS PRICE NOMINATION RISK"?

A. Overall, I disagree in part due to a lack of delineation of differing risk types. Mr. Heidell uses the term "gas price nomination risk", which is vague in describing the

specific types of risk faced by natural gas fired generation. Forward gas purchases, natural gas call options, and natural gas storage alternatives do not fare well when hedging intraday pricing risk, as discussed below. It is true that these mechanisms can serve as financial hedges against changing monthly and daily market movements. However, as discussed in previous testimony and data requests, even when seeking to hedge against monthly and daily price movements, these hedging mechanisms are problematic for several reasons.

Q. WHAT ARE THOSE REASONS?

A. The reasons why these hedging mechanisms are a problem include complexity of sizing, liquidity, expense, and long-term price certainty.

Q. CAN YOU EXPLAIN WHAT YOU MEAN BY THOSE TERMS?

A. Yes. As it relates to forward gas purchases, natural gas call options, and natural gas storage alternatives, determination of the contract size (the daily delivery amount) must occur well in advance of when the gas will be delivered and consumed. It becomes necessary to weigh the quantity of gas that will likely be liquidated during non-event days against the need for significantly increased gas volumes during event days. Unless the hedging mechanisms are significantly oversized, it is unlikely they would be large enough to adequately carry the unit through an extended winter storm event. Liquidity refers to accessibility of a product. Long-term price certainty refers to certainty of pricing into forward years. According to Otter Tail's gas supplier, Tenaska Marketing Ventures, the Ventura call option market is illiquid, and the sellers of call options are difficult to find. Any call option purchase would likely be short term in nature that would not be guaranteed (availability or terms) beyond one or two seasons. Currently, there are no storage facilities on the Northern Border Pipeline. As such, storage on this pipeline cannot be procured at any cost. Utilization of storage on other pipelines is cost prohibitive due to pipeline transport costs. Data request number ND-PSC-2.09 of docket number PU-23-066 provides a detailed discussion of this topic.

Q. DO FORWARD NATURAL GAS PURCHASES, NATURAL GAS CALL OPTIONS, AND NATURAL GAS STORAGE ALTERNATIVES PROVIDE COMPARABLE INTRADAY RISK HEDGING CAPABILITY AS COMPARED TO ONSITE LNG FUEL STORAGE?

A. No, these hedging mechanisms compare poorly against onsite LNG fuel storage when considering intraday pricing risk. Per my previous testimony, intraday pricing risk (or intraday pricing deltas) is described as:

> "During volatile pricing conditions the natural gas market can vary dramatically between the time a generation offer is given to MISO and when MISO clears the offer. If the quantity of MWs cleared varies from expectations, and the price to procure or liquidate additional natural gas fuel supply varies from expectations, the generator can be exposed to significant pricing risk." (Retzlaff Original Testimony page 4 lines 16-21.)

Intraday pricing risk can also occur if MISO were to call upon the unit unexpectedly during the real time market, which occurred ruing 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.

Q. WOULD A FORWARD NATURAL GAS PURCHASE, NATURAL GAS CALL OPTION, OR NATURAL GAS STORAGE ALTERNATIVE HAVE ENABLED ASTORIA STATION TO AVOID ITS FORCED OUTAGE DURING WINTER STORM ELLIOT?

A. No. The outage was due to lack of fuel supply, which these hedging mechanisms could not have remedied. Furthermore, even if gas supply had been available, MISO called for Astoria commitment and dispatch late in the day, which would

have likely been well past the contracted timeline to nominate these possible gas resources for delivery.

Q. WOULD ONSITE LNG STORAGE HAVE ENABLED ASTORIA STATION TO AVOID ITS FORCED OUTAGE DURING WINTER STORM ELLIOT?

A. Yes. Onsite LNG storage would have enabled Astoria to run through the outage, which was due to lack of fuel supply, with no interruption. MISO would have been able to continue commitment of Astoria for both economic and reliability purposes for the duration of the winter storm event.

Q. DO YOU AGREE WITH MR. HEIDELL THAT OTTER TAIL CAN LIMIT RISK BY SIMPLY ADJUSTING THE ASTORIA STATION OFFER STRATEGY?

A. I agree with Mr. Heidell that utilization of an optimized offer strategy is prudent. Mr. Heidell states that risk would be reduced if Otter Tail would, "review prices, market behavior and appropriately adjust its bids based upon the risks it calculates with regards to next-day electricity prices, intraday gas costs, and potential losses in reselling unused gas. (page 5 lines 16 – 19)." This statement suggests that Otter Tail can significantly reduce risk during volatile system events by simply considering, and better applying, these factors. Otter Tail does not consider itself an expert in natural gas price forecasting, and as such, we have contracted with Tenaska Marketing Ventures (TMV), a leading natural gas supplier and consultant, to help us best predict future natural gas pricing. Otter Tail utilizes TMV gas pricing forecasts to craft our Astoria generation offers. Even when utilizing the TMV provided forecasts, and as demonstrated during both Winter Storms Uri and Elliot, expert forecasts can vary widely from actual pricing results and system dispatch conditions. To suggest that Otter Tail can substantially reduce risk during volatile system events, when pricing is incredibly volatile and unpredictable, by simply fine tuning our offer strategy is not a fair assessment. I would further note that over pricing a generation offer can also result in uneconomic outcomes, such as not being committed and dispatched when it would have been economic to do so.

Q. IN HIS RESPONSE COMMENTS, MR. HEIDELL OFFERS A CRITIQUE OF OTTER TAIL'S WINTER STORM URI ANALYSIS. DO YOU AGREE WITH HIS CRITIQUE?

A. I take issue with considerable portions of his critique.

Q. WHY DO YOU TAKE ISSUE WITH HIS CRITIQUE?

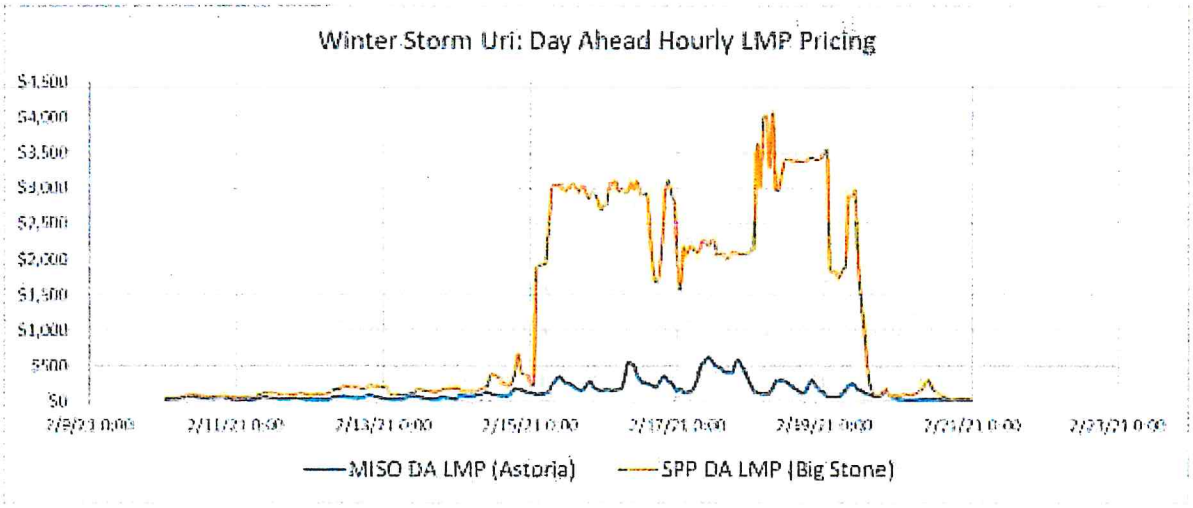
A. Mr. Heidell's critique operates under the presumption of perfect, after the fact, knowledge. He also discounts upward pricing indicators.

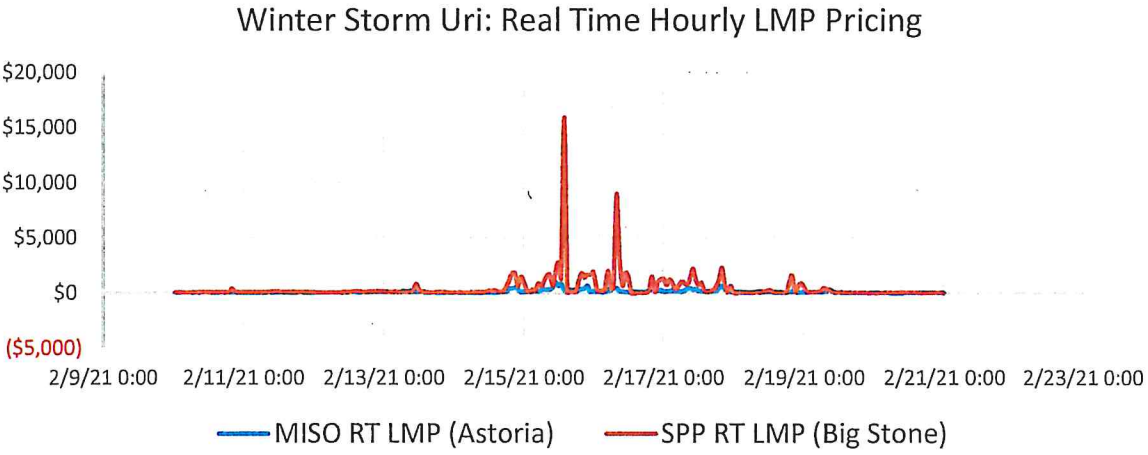
Q. WHAT ARE SOME OF THE UPWARD PRICING INDICATORS THAT WERE DISCOUNTED?

A. I would point you to my response testimony, which is included below for your convenience (Retzlaff Rebuttal Testimony page 15, lines 19 - 27):

> Throughout North Dakota and South Dakota there is considerable overlap of the MISO and SPP footprints. During Winter Storm Uri (February 10, 2021, through February 20, 2021) MISO day ahead LMP pricing at Astoria averaged $136.15/MWh (real time $114.78/MWh). During the same period, day ahead pricing in SPP at Big Stone Plant (near Astoria Station) averaged $1,173.33/MWh (real time $408.21/MWh). If system conditions would have been different, it is plausible that MISO could experience pricing levels like SPP.

Below you will find the hourly LMP pricing graphs during Winter Storm Uri, both day ahead and real time, for both MISO Astoria, and SPP Big Stone (an Astoria proxy in the SPP market).





Hourly day ahead pricing in SPP at Big Stone Plant exceeded $4,000/MWh. Real time hourly pricing exceeded $15,000/MWh. In addition, the MISO Value of Lost Load (VoLL), the hard price cap for market pricing, is $3,500 but ongoing discussions have included proposals to raise it as high as $25,000. During winter storm Uri real time hourly pricing reached $991 at Astoria Station. The highest 5-minute real time interval reached $2,184. I would also note that Winter Storm Uri was, at the time, an unprecedented event. There was no reasonable means for Otter Tail to predict pricing, commitment, or dispatch conditions.

Q. MR. HEIDELL STATES THAT 25 PERCENT, 50 PRECENT, AND 100 PERCENT TIMELY PURCHASE SCENARIOS ARE NOT CREDIBLE, CITING A $150/MMBTU TIMELY GAS PRICE ON FEBRUARY 17TH, 2021, EQUATING TO $1,433/MWH LMP RECOVERY COST. IS THIS A FAIR ASSESSMENT?

A. Apart from the 100 percent timely purchase scenario, which was included in the analysis to serve as a bookend, it is not. As just noted, there were factors suggesting the Astoria LMP pricing could have well exceeded Mr. Heidell's suggested $1,433/MWh LMP recovery cost. Furthermore, deciding to not procure gas goes against a conservative approach to maintain adequate fuel inventory during extreme market conditions. Perfect after the fact knowledge appears to make the decision to avoid purchasing gas reasonable, but this looks very different under real time operating conditions. Just because pricing didn't go higher doesn't mean it couldn't have or won't during future events.

Q. MR. HEIDELL POINTS TO OTTER TAIL'S DECISION TO NOT PROCURE EXPENSIVE, TIMELY NATURAL GAS DURING WINTER STORM ELLIOT TO SUGGEST OTTER TAIL WOULD NOT HAVE PROCURED EXPENSIVE, TIMELY NATURAL GAS DURING WINTER STORM URI. IS THIS A FAIR CONCLUSION?

A. No, it is not. Comparing Winter Storm Uri to Winter Storm Elliot is akin to comparing apples to oranges. While both Winter Storm Uri and Winter Storm Elliot were extreme events, each storm maintained specific characteristics making them unique onto themselves. In reference to Otter Tail's decision to not procure timely gas during Elliot, despite escalating natural gas prices, Astoria LMP energy prices, both real time and day ahead, remained very low. The natural gas and energy markets (at Astoria) diverged. This did not happen during Winter Storm Uri. As natural gas pricing rose, LMP pricing at Astoria followed suit. Second, during Winter Storm Elliot, the MISO regional wind forecast (and performance) was very strong, increasing electric supply and further acting to suppress LMP pricing at Astoria. During Winter Storm Uri, wind forecasts (and performance) were very low, reducing electric supply and acting to increase LMP pricing at Astoria. These two storms were considerably different winter events. Yet despite all indications during Elliot, and despite very depressed LMP pricing, MISO chose to commit and dispatch Astoria, for what appeared to be reliability reasons. Such a commitment and dispatch would have been impossible for Otter Tail to forecast.

This type of variability and unpredictability lend further support to the value of onsite fuel storage.

Q. IS IT REASONABLE TO ASSUME THAT OTTER TAIL WOULD NOT HAVE PURCHASED ANY TIMELY GAS DURING WINTER STORM URI?

A. It is very unlikely that Otter Tail would have forgone some level of timely gas purchases during Winter Storm Uri. Admittedly, to know exactly what Otter Tail might have purchased on any given day is difficult to determine. For this reason, our Winter Storm Uri economic analysis conducted sensitivities around timely natural gas purchases. However, and as noted previously, there were indications that Winter Storm Uri market pricing could have exceeded natural gas pricing. As a capacity accredited resource, Otter Tail is obligated to offer the unit into the market regardless of market conditions. In the event the unit is offered to the market without procuring timely gas, and is then cleared, it must now go to the market to buy gas at a cost that could greatly exceed the unit's offer. MISO only guarantees make whole payments to the unit's offer, not the actual cost of fuel procurement. During Winter Storm Uri, it turned out minimal timely gas purchases would have been optimal. Under different market conditions, the reverse could be true. Based on this balancing of risk factors, Otter Tail maintains it would have likely procured natural gas somewhere between 25 percent to 50 percent of Astoria's output during Winter Storm Uri. With the addition of onsite fuel capability, the intraday pricing risk associated with timely purchases (and real time commitments) would be essentially eliminated.

Q. MR. HEIDELL'S TESTIMONY HIGHLIGHTS THAT OTTER TAIL'S MODELING OF WINTER STORM URI, UTILIZING A DAILY 50 PERCENT TIMELY NATURAL GAS PURCHASE, WOULD HAVE RESULTED IN A $9.7M LOSS UNDER THE AVERAGE GAS CASE, DUE TO LIQUIDATION OF UNUSED FUEL. HE THEN CONCLUDES, THAT DUE TO THIS LOSS, OTTER TAIL WOULD NOT EXECUTE SUCH A STRATEGY. IS THIS A FAIR ASSESSMENT?

A. It is not. I would again point out that Mr. Heidell is operating under the presumption of perfect, after the fact, knowledge. It is important to note that yesterday's performance is not necessarily predictive of tomorrow's performance. This is especially true during the middle of volatile system events. Uncertainty is further compounded when moment to moment pricing indications send

conflicting signals (for example: high regional SPP pricing and high MISO five-minute tick pricing compared against previous day ahead MISO LMP values not exceeding prevailing gas pricing). As noted above, it is admittedly difficult to know exactly what Otter Tail might have purchased on any given day. However, to assume yesterday's uneconomic timely natural gas procurement would somehow result in certainty to move into tomorrow's market, procuring zero fuel to cover an unknown plant commitment, during the heart of a Winter Storm Uri event, would not be realistic. Again, this is why the Winter Storm Uri analysis specifically studied sensitivities to timely natural gas purchase levels.

Q. HOW WOULD HAVE ONSITE LNG STORAGE IMPACTED THE ABOVE SCENARIO?

A. First, onsite LNG storage would have eliminated Otter Tail's difficult decision to procure or not procure timely natural gas deliveries from the pipeline. If the forecasted cost of delivered gas exceeded the cost of the stored LNG, Otter Tail could simply utilize its stored onsite fuel, regardless of natural gas market price or volatility. Second, Otter Tail would also maintain a low cost, stable, flexible, and available fuel source (relative to the assumed market) that could be offered to MISO at a cost far below received market revenues. In the scenario highlighted by Mr. Heidell, the hedging decisions resulting in the $9.7M liquidation loss would be eliminated. Otter Tail would have been able to offer the onsite LNG generated energy into the market for a calculated $4.2M economic benefit. This would have resulted in a net positive economic benefit of $13.9M when comparing operations with LNG onsite fuel against operations without LNG onsite fuel.

Q. MR. HEIDELL NOTES THE HARMONIZATION OF THE NATURAL GAS AND ELECTRIC MARKETS COULD LEAD TO IMPROVED FUEL ASSURANCE. DO YOU AGREE?

A. I do, to an extent. There would certainly be benefits if the scheduling logistics of the daily natural gas and electric markets could be aligned. If timely gas could be secured at the same time day ahead market clearing awards were known, electric generators could procure timely gas volumes to match their cleared schedule. Such alignment would certainly be a step in the right direction. However, it also must be highlighted that if such alignment were to occur, it would not solve intraday pricing risk. Even under aligned gas and electric market timelines, MISO still

requires generation offers to be submitted hours in advance of posted clearing awards. During such time delays, and during volatile market conditions, the natural gas market can move significantly, resulting in actual fuel costs diverging from the projected fuel costs utilized to craft the original generation offer. Recall that MISO is only obligated to make the generator whole to their offer costs, not the actual cost of fuel procurement. Under such a scenario, the aligned natural gas and electric markets would ensure correct natural gas volume procurement, but the price of the gas procurement could vary drastically from the price utilized in the generation offer. Furthermore, alignment of the natural gas and electric trading days would not protect generators during an unexpected real time commitment scenario where volatile markets could result in divergence between real time offers and actual fuel procurement costs. Lastly, it should be noted that discussion regarding alignment of the natural gas and electric markets has been ongoing for many years. While discussions continue, I am unaware of any timeline or firm schedule that would move to align the two markets.

Q. WHAT WOULD BE REQUIRED TO ELIMINATE INTRADAY PRICING RISK?

A. Intraday pricing risk in the day ahead market could be eliminated if there was no time delay between when the unit is offered and when MISO posts the day ahead clearing results. It could also be eliminated if natural gas pricing remained fixed during the same offer/clearing time delay. Unfortunately, neither of these two options appear to be realistic or viable solutions. Real time intraday pricing risk would remain, as MISO can unexpectedly call on a unit for commitment and dispatch at any time. Onsite LNG storage would essentially eliminate all intraday pricing risk through provision of a known, constant, flexible, and readily available fuel supply.

Q. DO YOU HAVE ANY ADDITIONAL CONCLUDING OBSERVATIONS?

A. Yes. Otter Tail agrees with Mr. Heidell that it is critical to maintain a reliable electric system. We also agree with Mr. Heidell that the "frequency, magnitude, and consequences of major weather events is unknown and will vary and will not be uniform across the United States." It appears we disagree on the cost/benefit balance of onsite LNG storage at Astoria. Admittedly, we don't fully know what type of events will occur in the future. However, Otter Tail believes there are reasons (changing weather patterns, increased reliance on natural gas for

dispatchable generation, and increased utilization of non-dispatchable renewable resources) that could likely increase the frequency and magnitude of volatile system events, such as experienced during Winter Storms Elliot and Uri. Construction and utilization of onsite LNG storage at Astoria would significantly bolster our ability to optimize Otter Tail fleet performance during such future system events.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes. It does.