

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

Otter Tail Power Company
Advance Prudence – Astoria Fuel Inventory System
Application

Case No. PU-23-66
OAH No. 20230080

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STATE OF NORTH DAKOTA
COUNTY OF BURLEIGH

Pamela J. Thompson deposes and says that:

she is over the age of 18 years and not a party to this action and, on the **3rd day of November 2023**, she sent electronically to the parties listed below, the following:

- **Prefiled Surrebuttal Testimony of James Heidell - Redacted**

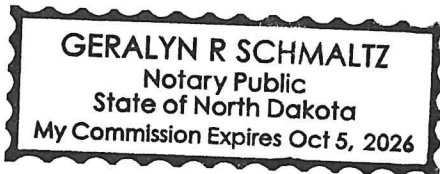
The emails were addressed as follows:

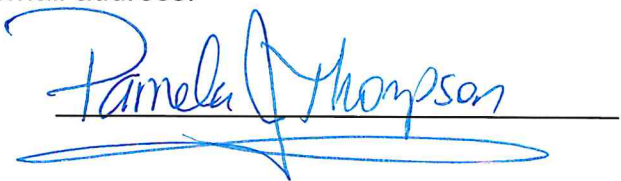
Timothy J. Dawson
Administrative Law Judge
tjdawson@nd.gov

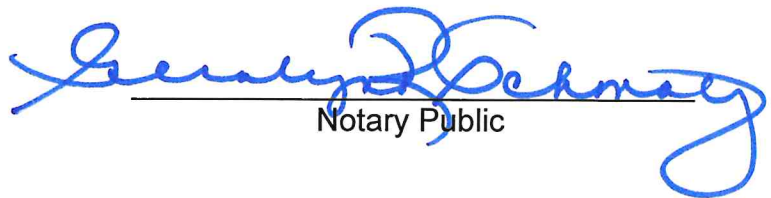
Cary Stephenson
Otter Tail Power Company
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To the best of affiant's knowledge each email address shown is the respective addressee's last reasonably ascertainable email address.

Subscribed and sworn to before me
this **3rd day of November 2023**.







Notary Public

SEAL

cc: Regulatory Filing Coordinators@otpc.com

34 PU-23-66 Filed: 11/3/2023 Pages: 15
Affidavit of Service, Email - Prefiled Surrebuttal
Testimony of James Heidell - Redacted



Public Service Commission State of North Dakota

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November 3, 2023

Public Service Commission
Attention: Steve Kahl
600 East Boulevard Avenue, Dept 408
Bismarck, ND 58505-0480

In re: Otter Tail Power Company
Advanced Prudence – Astoria Fuel Inventory System
Application
Case No. PU-23-066

Dear Mr. Kahl,

Enclosed for filing in the above referenced matter please find the original copy of the following public document:

1. Prefiled Surrebuttal Testimony of James Heidell on behalf of Advocacy Staff

Respectfully,

A handwritten signature in black ink, appearing to read "Brian Johnson".

Brian Johnson
Special Assistant Attorney General Bar ID 07937
North Dakota Public Service Commission
600 East Boulevard Avenue Dept. 408
Bismarck ND, 58505
701-328-2407

Public Document
Trade Secret Data Removed

SURREBUTTAL TESTIMONY

JAMES A HEIDELL

STATE OF NORTH DAKOTA
BEFORE THE
NORTH DAKOTA PUBLIC SERVICE COMMISSION

OTTER TAIL POWER COMPANY

CASE NO. PU-23-066

ADVANCE DETERMINATION OF PRUDENCE – ASTORIA STATION ONSITE FUEL INVENTORY SYSTEM

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1 **I. Introduction**

2 **Q. Would you please state your name, affiliation, and address?**

3 **A.** My name is James A. Heidell, and I work as a Partner for PA Consulting Group, Inc.
4 (PA). My business address is 1700 Lincoln Street, Suite 3550, Denver, CO 80203.
5

6 **Q. Have you previously testified in this proceeding?**

7 **A.** Yes, I submitted prefiled direct testimony on behalf of the Advocacy Staff of the North
8 Dakota Public Service Commission (Commission or NDPSC).
9

10 **Q. What is the purpose of your surrebuttal testimony?**

11 **A.** The purpose of my testimony is to respond to the rebuttal testimony filed by Otter Tail
12 witnesses Mr. Retzlaff and Mr. Jenson.
13

14 **Q. Would you please summarize the organization of your testimony?**

15 **A.** Yes. My testimony is separated into five sections:

- 16 • My response to concerns and issues raised by Mr. Retzlaff (Section II);
 - 17 • Specific concerns related to Mr. Retzlaff's testimony regarding his conclusion
18 that Otter Tail's hypothetical analysis of losses during Winter Storm Uri is
19 reasonable (Section III);
 - 20 • My response to concerns and issues raised by Mr. Jenson (Section IV);
 - 21 • Additional Issues (Section V); and
 - 22 • My conclusions (Section VI)
- 23

24 **Q. Have you changed your recommendation based upon the rebuttal testimony filed by
25 Otter Tail?**

26 **A.** No. My recommendation remains that the Commission should not approve the ADP. I
27 acknowledge that onsite LNG provides additional fuel security. However, my conclusion
28 remains that the anticipated cost of the project does not justify the level of speculated

1 benefits that Otter Tail attributes to the project. Furthermore, while there could be future
2 events that limit natural gas deliveries to Astoria, the incremental reliability benefits
3 appear minimal based upon historical data.
4

5 **II. Response to Mr. Retzlaff's Rebuttal Testimony**

6 **Q. Do you agree with Mr. Retzlaff that the benefit of onsite fuel storage is associated**
7 **with extreme events?**

8 A. Yes, I agree that the role of onsite fuel storage at Astoria is a hedge against unknown
9 future extreme events. However, I do not fully agree with his statement that "the primary
10 financial benefits associated with onsite LNG fuel storage occur during extreme and
11 volatile system events".¹
12

13 **Q. Would you please explain why you do not fully agree with his statement?**

14 A. Mr. Retzlaff's statement implies that there are reasonably expected financial benefits.
15 Based upon my review of historical natural gas prices as well as the information provided
16 by Otter Tail, I have not noted other periods outside the Uri and Elliot storms where
17 onsite storage would have any significant financial value. Furthermore, Mr. Retzlaff has
18 not defined "volatile system events". While one could describe natural gas pricing as
19 volatile, I have not identified more than 126 hours in the past 14 years where it would
20 have been lower cost to dispatch Astoria and burn LNG based upon Otter Tail's LNG
21 cost assumption. Note that 91 of those 126 hours were during Winter Storm Uri. That
22 means that looking back 14 years there was one event that accounted for over 70% of the
23 hours.
24

25 **Q. Do you agree with Mr. Retzlaff that the timing for next day gas nominations and**
26 **MISO bids / awards for generation do not line up?**

¹ Rebuttal Testimony of Mr. Retzlaff p 14 lines 25-27.

1 A. Yes, that is a known issue and risk that traders have dealt with for years. It is also a well-
2 known issue that many industry participants are trying to address and advocating
3 solutions to.

4
5 **Q. Do you agree that on-site fuel storage is the solution to address gas price nomination**
6 **risk?**

7 A. I agree that it is a solution that historically has had limited usefulness given the cost
8 differentials between intraday natural gas and the assumed cost of LNG. I do not agree
9 that is either the only solution, or that based upon historical data that it is a cost-effective
10 solution.

11
12 **Q. Were you suggesting that Otter Tail withhold generation as a strategy to mitigate**
13 **the gas nomination / electric bidding risk?**

14 A. No, to be more precise with regards to my prefiled direct testimony; Otter Tail does not
15 have to submit a bid to MISO based only upon Timely Quotes for natural gas, the plant
16 heat rate, and non-fuel O&M costs. It is incumbent on Otter Tail to review prices, market
17 behavior and appropriately adjust its bids based upon the risks it calculates with regards
18 to next-day electricity prices, intraday gas costs, and potential losses in reselling unused
19 gas. The issue is whether a market participant has market power or is engaging in anti-
20 competitive behaviors. The Market Monitor in evaluating withholding considers the
21 volatility of fuel prices.

22 “Our benchmarks for units’ marginal costs are imperfect,
23 particularly during periods with volatile fuel prices. Hence, we add
24 a threshold to the resources’ reference level to determine Qi econ.
25 This ensures that we will identify only significant departures from
26 competitive conduct.” [2022 State of the Market Analytic
27 Appendix p 139]

1 **III. Mr. Retzlaff's Hypothetical Analysis of Storm Uri**
2

3 **Q. What was Mr. Retzlaff's response to your testimony regarding the hypothetical**
4 **savings had Astoria achieved COD and had onsite fuel storage during Winter Storm**
5 **Uri?**

6 A. Mr. Retzlaff notes that it is reasonable to assume that 25 percent to 50 percent of
7 Astoria's gas needs would have been purchased using timely nominations.²
8

9 **Q. Do you agree with Mr. Retzlaff's conclusion?**

10 A. No. First, I want to emphasize that both Mr. Retzlaff and I are disagreeing about a purely
11 hypothetical analysis. During Storm Uri there was not an interruption of gas flow on
12 NBPL and in fact Astoria took delivery of natural gas on February 14, 2021. However,
13 neither what Otter Tail could have resold natural gas for is known, nor do we know how
14 the Company would have actually bid the unit into MISO after assessing gas price risks.
15 As a result, it is not known what the timely purchase decision would be for each day, or
16 the potential loss had Otter Tail resold the gas in the intraday market. With those
17 caveats, my conclusion remains that the 25%, 50%, and 100% timely purchase scenarios
18 are not credible given the pattern of assumed timely purchase prices and MISO day ahead
19 prices, and the duty of the Company to mitigate risks.
20

21 **Q. Do you have a specific example as to why you do not believe the timely purchase**
22 **assumption is credible?**

23 A. Yes. Otter Tail assumes that it would make timely purchases on February 17, 2021 when
24 the timely natural gas quote was \$150/MMBTU. That means that the Company would
25 have to assume some combination of circumstances that the MISO hourly price was in
26 excess of \$1,433/MWH to recover the natural gas cost or be able to resell the gas at that
27 price. For the three prior days of the storm where timely quote gas prices were

² Retzlaff Rebuttal, p 12 lines 20 – 22.

1 \$50/MMBTU and \$100/MMBTU, there were only three hours where the DA LMP prices
2 would recover the assumed cost of the gas based upon the Timely Quote. Based upon the
3 Timely Settlement Price, the plant would have lost money had its bid been picked up for
4 those three hours.

5
6 **Q. Is it reasonable to assume that Otter Tail would mitigate the risk of buying
7 expensive gas in timely purchases by not purchasing day ahead and making
8 appropriate bids into MISO?**

9 A. Yes, during February 13 – 18, 2021 when the timely purchase price of natural gas was
10 \$50, \$75, and \$150 one would need to assume that MISO prices would be over
11 \$477/MWH, \$716/MWH, and \$1,433/MWH for the next day. The alternative could have
12 been to add a risk premium on its assumption for intraday gas and set a higher bid price.
13 In retrospect the day ahead prices only justified the timely purchase price a limited
14 number of times as shown in the following table.

Gas Price	# of Days	# of Hours Day Ahead Exceeded Strike Price
\$50	4	3
\$75	1	0
\$150	1	0

15
16 **Q. At the time of making nominations would Otter Tail know what the gas prices
17 would settle at for the next day?**

18 A. No, but in reference to Winter Storm Elliot Mr. Retzlaff indicates that it would be
19 unlikely to make the gas purchases that are modeled in the hypothetical scenarios.

20 "Please note day ahead pricing for both December 23 and 24
21 would not have suggested commitment and dispatch of Astoria
22 Station, especially considering the high cost to procure timely gas
23 during this period. Give the high cost of gas and the day ahead

1 clearing indications, a decision was made to abstain from
2 purchasing timely (day ahead) gas.” Rebuttal Testimony p 5.
3

4 **Q. Do you have any other concerns with Mr. Retzlaff’s modeling of the hypothetical**
5 **scenarios?**

6 A. Yes. There is no indication that Otter Tail would follow a static policy of purchasing a
7 fixed percent of gas day ahead, given the highly unusual level of prices and unique
8 weather event. Mr. Retzlaff acknowledges that he would make decisions on whether he
9 would nominate day ahead gas based upon timely quotes and expectations of the MISO
10 market. I expect that under typical conditions that Otter Tail will bid Astoria into MISO
11 based upon expected gas cost times the unit’s heat rate. However, it is my understanding
12 that the Company can legitimately adjust its bids into MISO to reflect the risk of
13 purchasing expensive gas in the intraday market. Furthermore, I expect that based upon
14 Otter Tail’s modeling of Storm Uri and conclusion that the Company could lose \$9.7M to
15 \$25.8M with the 50% timely purchase strategy, the Company would not execute that
16 strategy in the future.
17

18 **IV. Response to Mr. Jensen’s Rebuttal Testimony**
19

20 **Q. Do you agree with Mr. Jensen’s characterization that your testimony does not**
21 **consider the concerns of MISO to ensure reliability during extreme events?**³

22 A. No, I disagree with that characterization. First, I want to emphasize that my testimony
23 did not say that onsite storage would not add more reliability. The concerns that I
24 highlighted were about the economic benefits versus the cost to customers. While I agree
25 with Mr. Jensen that “it is hard to quantify net reliability benefits”, it is in fact necessary
26 to put a value on it in order to evaluate how much reliability to buy. I relied upon the
27 MISO assumptions regarding the cost of outages.

³ Rebuttal Testimony of Mr. Jensen p 2 lines 3-8.

1
2 **Q. Why is it necessary to put a value on reliability?**

3 A. Even if one could design a system that guaranteed delivery in electricity under any Black
4 Swan event imaginable, that would likely result in making electricity unaffordable. There
5 are inevitably tradeoffs between the level of service and the cost of electricity and that is
6 the decision facing the Commission in this ADP.

7
8 **Q. What is your response to Mr. Jensen concern regarding fuel assurance for Astoria?**

9 A. First, I note that Mr. Jensen quotes NERC as stating

10 “proactively taking steps to identify fuel arrangements or other alternatives
11 that would provide confidence such that fuel interruptions are
12 minimized...”⁴

13 The NERC guidance neither mandates a secondary fuel source, nor is it stating that there
14 can be no fuel interruptions. Furthermore, Mr. Jensen then goes on to note NERC
15 guidance is to “Consider and evaluate and evaluate a diverse portfolio of products that
16 can be utilized to deliver fuel both reliably and *cost effectively*”. [emphasis added]

17
18 **Q. Does Astoria have a reliable supply of natural gas?**

19 A. The Company appears to suggest that it does not, and hence onsite fuel storage is needed.
20 However, I note that there were not interruptions on NBPL upstream or downstream of
21 Astoria during Winter Storm Uri. In addition, Otter Tail noted that the primary
22 consideration for siting Astoria was its “proximity to reliable and robust natural gas and
23 electric transmission infrastructure”.⁵ Furthermore, Otter Tail not only did not identify
24 fuel supply as a risk in its ADP for Astoria, the Application highlighted that between
25 2009 and 2017 there were only two times that the gas market was as volatile as the real-
26 time electric markets.⁶

⁴ Rebuttal Testimony of Mr. Jensen p 3 lines 20-25.

⁵ Swanson Direct Testimony p 5 PU-17-140.

⁶ Draxten Direct Testimony p 12 PU-17-140.

1
2 **Q. Are there other potential options to improve fuel assurance?**

3 A. Yes, a recent report by the North American Energy Standards Board notes that onsite
4 LNG has limited applications and that there are other options including harmonization of
5 natural gas and electric markets.⁷
6

7 **V. Additional Issues**
8

9 **Q. Has Otter Tail provided any update to the February 8 cost estimate?**

10 A. The Company has indicated that it now expects the cost to slightly higher and the estimate
11 is [CONFIDENTIAL DATA BEGINS] \$XXM with a range of -10% - +30%
12 [CONFIDENTIAL DATA ENDS]. The higher end of the cost estimate translates into
13 an average revenue requirement of [CONFIDENTIAL DATA BEGINS]\$XXX
14 [CONFIDENTIAL DATA ENDS] for the first ten years.
15

16 **VI. Conclusions**
17

18 **Q. Would you please summarize your conclusions?**

19 A. Yes

- 20
- 21 • Given the high operating fuel cost of the LNG, it is unlikely to be used except in
22 periods of severe disruption of natural gas supplies.
 - 23 • Otter Tail has only identified one instance where gas supplies were / would have been
24 disrupted to Astoria and in that instance Astoria was not needed for system reliability
25 and the economic benefits of onsite LNG would not justify the annual cost.
 - 26 • While onsite LNG could provide fuel cost savings during periods of extreme gas
prices, Otter Tail's hypothetical scenarios of the savings associated with having onsite

⁷ Gas Electric Harmonization Forum Report, North American Energy Standards Board, July 28, 2023.

1 fuel storage in its 25%, 50%, and 100% timely purchase cases are not credible based
2 upon the cost of gas, available generation, and the pattern of hourly electricity prices.

- 3 • The Company's analysis of Winter Storm Elliot does not justify the anticipated
4 average increase in the revenue requirement.
- 5 • While onsite fuel storage does create an additional margin of fuel security, there was
6 only limited disruption of natural gas flows on NBPL during Winter Storm Elliot and
7 no disruption during Winter Storm Uri. During Winter Storm Uri, natural gas flows on
8 NBPL both upstream and downstream of the Astoria delivery point showed normal
9 volumes of 2-2.5 Bcf/d.
- 10 • Despite apparent concerns by Otter Tail about natural gas price volatility, historical
11 dispatch of Astoria indicates that only approximately 11% of the generation has been
12 in the months of Dec – February and the average cost of gas for the winter months has
13 only been approximately \$0.75/MMBTU compared to the remaining nine months.
- 14 • Reform and harmonization of the gas and electric markets may lead to a lower cost
15 approach for Otter Tail to manage the gas cost nomination risk.

16
17 **Q. Do you have additional concluding observations?**

18 A. Yes, I do not believe there is any disagreement between Otter Tail and myself that it is
19 critical to have a reliable electric system and that in recent years there have been extreme
20 weather events. We appear to differ in our evaluation of how much more reliability
21 onsite fuel provides to the MISO system and the economic benefits of having the option
22 to burn LNG.

23 The frequency, magnitude, and consequences of major weather events is unknown and
24 will vary and will not be uniform across the United States. There is a tradeoff between
25 how much to spend to enhance reliability and the anticipated reduction in outages.

26 However, as was witnessed during Winter Storm Elliot, the curtailment of natural gas to
27 Astoria did not create a MISO system outage. It is possible that a pattern of more severe
28 weather or more intermittent generation resources in MISO could justify an investment in
29 onsite fuel at Astoria. However, my assessment is that at this time the cost has not been

1 justified. In this instance, deferring the project until there is a better demonstration of
2 need does not preclude the option of adding onsite fuel storage at a later date.
3

4 **Q. Does this conclude your testimony?**

5 **A. Yes.**

