

STATE OF NORTH DAKOTA
BEFORE THE
PUBLIC SERVICE COMMISSION



Otter Tail Power Company
Advance Prudence – Astoria Gas
Application

Case No. PU-17-

DIRECT TESTIMONY
OF
BRADLEY E. TOLLERSON
ON BEHALF OF
OTTER TAIL POWER COMPANY

Policy Testimony

April 10, 2017

- 45 PU-17-143 Filed 10/06/2017 Pages: 11
Exhibit OTP-3 - Direct Testimony of Bradley Tollerson
Otter Tail Power Company
- 41 PU-17-141 Filed 10/06/2017 Pages: 11
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- 36 PU-17-140 Filed 10/06/2017 Pages: 11
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1
2
3 **I. INTRODUCTION AND QUALIFICATIONS**

4 Q. PLEASE STATE YOUR NAME AND TITLE.

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

7 Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

8 A. I have a Bachelor of Science degree in electrical engineering and a Master's degree in
9 business administration from North Dakota State University. I have worked for Otter
10 Tail for 20 years in various positions, including as an Electrical Engineer, Senior Project
11 Engineer, and Manager of Power Services. I have served in my current position as Vice
12 President of Planning and Strategy since June of 2014.

13
14 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

15 A. The purpose of my testimony is to provide support for Otter Tail's request for an
16 Advance Determination of Prudence (ADP) for the Company's proposed development of
17 an approximately 250-megawatt (MW) natural gas-fired simple cycle combustion turbine
18 (Astoria Station or the Project). In my testimony, I address the following topics:

- 19 • Our proposed resource addition;
20 • The prudence of the resource addition; and
21 • The other witnesses testifying on behalf of the Company.

22 Additionally, I sponsor the Company's ADP Application and am available to answer
23 questions regarding it.

24
25 **II. OVERVIEW OF THE PROJECT**
26

27 Q. PLEASE DESCRIBE ASTORIA STATION.

28 A. Astoria Station will be an approximately 250 MW natural gas-fired, frame type simple
29 cycle, combustion turbine¹ near the small town of Astoria in Deuel County, South

¹ The actual size of the simple cycle machine will be determined through Otter Tail's sourcing efforts which will seek to purchase the lowest-cost combustion turbine then available on the market, consistent with the size of the Company's capacity needs.

1 Dakota, approximately 25 miles northeast of Brookings, South Dakota. Otter Tail has
2 purchased real estate for the Project at the intersection of the Northern Border Pipeline
3 and the Big Stone South-Brookings County 345 kilovolt (kV) transmission line.
4 Company witness William Swanson provides more detailed information on the nature of
5 the facilities proposed.

6
7 Q. WHAT IS THE TIMELINE FOR THE PROJECT?

8 A. We anticipate the Project will be permitted, designed, procured, constructed, and placed
9 in service no later than May 31, 2021. This timing is intended to correlate to capacity
10 needs that I discuss below.

11
12 Q. WHAT ARE THE ESTIMATED COSTS FOR ASTORIA STATION?

13 A. The total cost of Astoria Station is estimated to be approximately \$165 million or
14 \$665/kW of installed capacity. Company witness William Swanson provides additional
15 information regarding the cost of the Project in his direct testimony.

16
17 Q. WHY IS THE PROJECT NEEDED?

18 A. Otter Tail has forecasted a need for both capacity and energy as a result of: (1) forecasted
19 load growth; (2) the expiration of capacity purchase agreements; and (3) the anticipated
20 retirement of the Company's Hoot Lake Units 2 and 3 in 2021. The Company's current
21 analysis shows that without adding replacement capacity and energy, Otter Tail will have
22 a capacity deficit of approximately 273 MW in 2021 and will need to source between
23 26% to 31% of its energy need from MISO's energy market.

24
25 As discussed in the Company's most recent Integrated Resource Plan (IRP), the Project is
26 the second component of the Company's two-part plan to meet our customers' growing
27 needs. The other component of this plan is the Merricourt Project, an approximately 150
28 MW wind generating facility located in North Dakota. Additional details regarding the
29 need for Astoria Station and supporting resource planning analysis are provided in the
30 Direct Testimony of Brian Draxten and Randy Synstelien.

1 Q. HOW DID THE COMPANY SELECT THE PROJECT?

2 A. As part of the Company's 2013 resource planning cycle, Otter Tail analyzed potential
3 replacement scenarios in anticipation of the retirement of Hoot Lake Plant. Several
4 different resource selection options were available in the Strategist model used in this
5 analysis, including a 311 MW combined cycle generator, three different sized simple
6 cycle generators, the repowering of Hoot Lake Plant to natural gas, and wind and solar
7 resources. The Company's analysis indicated that selection of a simple cycle generator
8 was the most economic outcome. In the Company's 2016 resource planning cycle,²
9 Strategist selected a wind-plus-gas configuration under updated assumptions in all
10 scenarios analyzed. In fact, Strategist was permitted to select a simple cycle generator
11 with the characteristics of the Project and did so in every scenario analyzed. Said
12 differently, the Company's 2016 analyses confirmed that moving forward with a simple
13 cycle gas-fired generator with the characteristics of Astoria Station was the most
14 economical way to meet Otter Tail's needs. Additional details regarding the Company's
15 resource planning analysis are discussed in the Direct Testimony of Randy Synsteliën.

16

17 Q. DID THE COMPANY EVALUATE ALTERNATIVES BEFORE SELECTING THE
18 PROJECT AND PROJECT SITE?

19 A. Yes. In 2015, the Company completed an extensive internal evaluation of both a
20 combined cycle and a "hybrid" simple cycle combustion turbine/wind project, and of the
21 preferred sites for gas generation.

22

23 Q. WHAT OPTIONS DID OTTER TAIL CONSIDER REGARDING A COMBINED
24 CYCLE PLANT?

25 A. In the Company's 2013 resource planning process, we provided Strategist the option of
26 selecting a small 311 MW combined cycle plant to meet load serving needs. This
27 combined cycle configuration was not selected in most scenarios analyzed, indicating it
28 was not the least cost method of serving customers over the thirty-year planning period.

29

² Otter Tail's most recent IRP was filed with the Commission on June 15, 2016, in Case No. PU-16-308.

1 That said, Otter Tail's analysis identified that the concurrent need for capacity and energy
2 resources could potentially have been met from a larger combined cycle plant that would
3 drive down unit costs through economies of scale. Consequently, Otter Tail sought to
4 determine if there may be partnership opportunities for a larger combined cycle plant.
5 Otter Tail's efforts were ultimately unsuccessful. In light of this, Otter Tail does not
6 believe that it has the opportunity to develop a larger, more economic, combined cycle
7 plant to meet its resource needs. Therefore, since the small 311 MW combined cycle
8 plant was not chosen as economic in the Company's resource planning analysis, Otter
9 Tail did not continue assessing a combined cycle plant.

10
11 Q. PLEASE DISCUSS HOW THE COMPANY SELECTED THE PROJECT.

12 A. First, we considered the ownership structure. We determined that Company long-term
13 ownership, instead of a power purchase agreement, was the most appropriate ownership
14 structure. This is described in more detail in the testimony of Company witness Brian
15 Draxten.

16
17 We then considered project sites. The Company determined that a site at the intersection
18 of a natural gas pipeline and electric transmission line was optimal. The Project site is at
19 such an intersection. Because both electric and natural gas transmission are located on the
20 property, interconnection costs for each are projected to be significantly lower than at
21 other sites considered by the Company. Potential future expansion at the Project site is
22 also possible due to superior electric and natural gas transmission capacity. The site
23 selection analysis is described in more detail in the testimony of Company witness
24 William Swanson.

25
26 Q. DID THE COMPANY CONSIDER A NORTH DAKOTA SITE FOR THE PROJECT?

27 A. Yes. Several North Dakota sites were considered. Each of those sites, however, required
28 the construction of one or more lengthy natural gas pipelines, which would have
29 increased the overall cost of the Project.

30

1 Q. DID THE COMPANY EXPLORE WAYS TO MAKE SUCH A PIPELINE LESS
2 COSTLY?

3 A. Yes. Company executives explored ways to make such a North Dakota project viable
4 and met with key stakeholders and decision makers to help develop solutions for pipeline
5 development. In the end, the costs of extending a pipeline could only be justified if more
6 regional need for natural gas existed than would be required for generation from a simple
7 cycle combustion turbine. There was a great deal of uncertainty about the natural gas
8 demand necessary to reduce the costs of extending a pipeline. Additionally, there was
9 uncertainty about the distribution infrastructure necessary for delivery of natural gas in
10 communities that are either underserved or do not presently have natural gas service.
11 Quite simply, the challenges and likely delays associated with a North Dakota site could
12 not overcome the ideal characteristics of the Astoria site.

13
14 Q. WHAT OTHER CHARACTERISTICS MAKE A SIMPLE CYCLE COMBUSTION
15 TURBINE A PRUDENT RESOURCE ADDITION?

16 A. Among other things, the Project will serve to hedge customers' energy needs, so that they
17 are not paying high market prices during periods when wind is not available. The unit
18 will also have quick start, load-following capabilities to support grid reliability. In his
19 Direct Testimony, Company witness Brian Draxten discusses additional considerations
20 that make a simple cycle combustion turbine an attractive option.

21
22 **III. PRUDENCE OF THE RESOURCE ADDITION**
23

24 Q. IS THE PROPOSED RESOURCE ADDITION PRUDENT?

25 A. Yes. Astoria Station will provide significant quantitative and qualitative benefits to our
26 customers, and appropriately balances benefits and risks as a stand-alone capacity
27 resource. When paired with our Company's Merricourt Project proposal, the Project will
28 optimize the delivery of affordable energy and capacity for our customers. It will also
29 cost-effectively allow us to diversify our Company's generation fleet.

1 Q. PLEASE SUMMARIZE THE QUANTITATIVE BENEFITS OF THE PROJECT.

2 A. Modeling performed in our last IRP indicated that a simple cycle natural gas combustion
3 turbine paired with a wind project presented a least-cost plan to meet the Company's
4 capacity and energy needs in the future. Updated modeling based on costs and operating
5 characteristics specific to Astoria Station confirmed that this Project represents a least-
6 cost alternative. Otter Tail also compared scenarios with and without the Astoria Project
7 as a complement to the Merricourt wind project. This analysis indicated that the Astoria
8 Project lowers lifetime system costs as compared to scenarios without the resource
9 addition. Additional details regarding this analysis are discussed in the Direct Testimony
10 of Randy Synsteliën.

11

12 Q. PLEASE SUMMARIZE THE QUALITATIVE BENEFITS OF THE PROJECT.

13 A. In addition to being a least-cost option to meet capacity needs, the Astoria Project
14 provides significant hedge value to Otter Tail's customers. In particular, if energy market
15 prices are sufficiently high, the Project will be dispatched and Otter Tail's customers will
16 pay the unit's production costs rather than the higher market pricing.

17

18 The gas-fueled Astoria Station and wind-fueled Merricourt Project have natural
19 synergies—wind is an intermittent, variable energy resource, while natural gas simple
20 cycle generation provides significant flexibility in addressing wind generation's
21 intermittency and variability, because it is able to start and achieve full output in a
22 manner of minutes and is capable of cycling multiple times per day, providing grid
23 support. Moreover, the addition of Astoria Station will increase the diversity of our
24 resource mix and thereby provide a hedge against potential environmental regulation.
25 Astoria Station, in conjunction with the Merricourt Project, represents remarkable energy
26 value for customers and prudently mitigates the financial risk associated with exposure to
27 the market.

28

29

30

1 Q. DID THE COMPANY IDENTIFY ANY RISKS ASSOCIATED WITH THE
2 PROJECT?

3 A. There are risks associated with the Project, just as there are risks with any project. Risks
4 associated with Astoria Station include greater than expected interconnection costs and
5 construction risks. Company witness William Swanson addresses these risks and how
6 the Company plans to address them.

7

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

10 A. Yes. The Company successfully owns, operates, and maintains similar facilities
11 elsewhere.

12

13 Q. THE COMPANY FILED A CONTEMPORANEOUS APPLICATION FOR AN ADP
14 FOR THE MERRICOURT PROJECT. DOES A DETERMINATION WITH RESPECT
15 TO THE MERRICOURT PROJECT IMPACT THE NEED FOR OR PRUDENCY OF
16 ASTORIA STATION?

17 A. No. While the Company's two-part plan to meet our customers' needs – Astoria Station
18 and the Merricourt Project – provides least-cost capacity and energy for the Otter Tail
19 system in the most prudent fashion, even without the wind component, Astoria Station
20 remains prudent as a needed and least-cost capacity resource which provides dispatchable
21 energy and material hedge value to the Company's customers.

22

23 IV. PRESENTATION OF WITNESSES

24

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

27 A. In addition to my policy testimony, the Company sponsors the following witnesses:
28 • **Brian Draxten** provides an overview of the Company's resource planning and a
29 summary of the need for the Project;

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

Otter Tail Power Company
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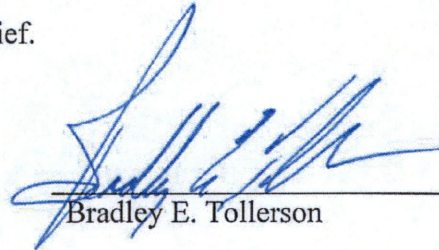
Case No. PU-17-___

VERIFICATION

STATE OF MINNESOTA)
) ss.
COUNTY OF OTTER TAIL)

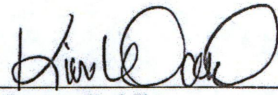
BRADLEY E. TOLLERSON, being first duly sworn on oath, deposes and says that he is the Vice President of Planning and Strategy for Applicant Otter Tail Power Company; that the testimony and schedules submitted in the above-captioned matter under his name were prepared under his direction; and that he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

Dated this 10 day of April, 2017



Bradley E. Tollerson

Subscribed and sworn to before
me on this 10 day of April, 2017.



Notary Public
My Commission expires 1-31-22

