

**STATE OF NORTH DAKOTA  
BEFORE THE  
PUBLIC SERVICE COMMISSION**

Otter Tail Power Company  
Advance Prudence – Merricourt Wind  
Application

Case No. PU-17-

Otter Tail Power Company  
PC&N – Merricourt Wind  
Application

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**APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE AND  
CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY**

**I. INTRODUCTION**

Pursuant to N.D.C.C. § 49-05-16 and N.D.A.C. § 69-02-02-04, Otter Tail Power Company (Otter Tail or the Company) respectfully submits this Application for an advance determination of prudence (ADP) for the Company’s proposed purchase, development, ownership, and operation of the Merricourt wind farm (the Merricourt Project or Project), an approximately 150 MW wind generation facility to be located near Merricourt, North Dakota. Pursuant to N.D.C.C. § 49-03-01, Otter Tail also requests that the Commission grant a certificate of public convenience and necessity (CPCN) for the Project. In 2011, the Commission issued a Certificate of Site Compatibility (CSC) for the Merricourt Project site.<sup>1</sup> In 2015, the Commission granted an amendment of the CSC<sup>2</sup> and on March 3, 2017, the project developer

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<sup>1</sup> *enXco Dev. Corp. Merricourt Wind Power Project Siting Application*, Case No. PU-08-932, FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER (June 8, 2011).

<sup>2</sup> *EDF Renewable Dev., Inc. Merricourt Wind Power Project Siting Application*, Case No. PU-08-932, AMENDED FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER (May 27, 2015).

filed an application to further amend the CSC to accommodate the turbine technology presently envisioned, among other things.<sup>3</sup>

The Merricourt Project will provide low-cost energy as part of Otter Tail's two-part plan to reliably meet our customers' electric needs, replace expiring capacity purchase agreements, and prepare for the 2021 retirement of the 1950s-era 140 MW Powder River Basin (PRB) coal-fired Hoot Lake Plant near Fergus Falls, Minnesota. The other component of Otter Tail's two-part plan is the construction of an approximately 250 MW simple cycle natural gas-fired combustion turbine generation facility (Astoria Station), which will provide low-cost capacity, provide dispatchable energy, and have the capability to quickly start and follow load to bolster system reliability.

Otter Tail is embarking on the Merricourt Project at this time to capture the highly-competitive pricing made available by the federal production tax credit (PTC) for wind facilities before the PTC expires. The Merricourt Project is least-cost and needed.

The Company's economic analysis of the Merricourt Project indicates that it will save Otter Tail's customers approximately \$112 million over its life. The low-cost of the energy to be provided by the Merricourt Project justifies its prudence, even without consideration of Astoria Station. Further, the energy provided by the Merricourt Project will reduce Otter Tail's reliance on potentially volatile energy markets and provide a hedge against future fuel price fluctuations, including for natural gas. Specifically, the energy from the Merricourt Project is expected to

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<sup>3</sup> *EDF Renewable Dev., Inc. Merricourt Wind Power Project Siting Application*, Case No. PU-08-932, APPLICATION FOR AMENDMENT TO AMENDED CERTIFICATE OF SITE COMPATIBILITY (Mar. 3, 2017).

reduce Otter Tail's reliance on energy market purchases from approximately 26% to 31%

without the Project, to approximately 16% to 20% with the Project.<sup>4</sup>

This Application and supporting testimony demonstrate that Otter Tail's proposed purchase, development, ownership, and operation of the Merricourt Project is a prudent resource addition, because it will provide a cost-effective generation resource for the Company's North Dakota electric customers and the risks have been reasonably mitigated. Furthermore, under N.D.C.C. § 49-05-16(7), a rebuttable presumption exists that the Project, which is located in North Dakota, is prudent. This Application and supporting testimony also demonstrate that the Project meets the requirements for a CPCN.

## II. DESCRIPTION OF APPLICANT

Applicant's full name and post office address are as follows:

Otter Tail Power Company  
215 South Cascade Street  
P.O. Box 496  
Fergus Falls, MN 56538-0496

Otter Tail is a Minnesota corporation duly authorized to do business in the State of North Dakota as a foreign corporation, and it is doing business in North Dakota as a public utility subject to the jurisdiction of, and regulation by, the Commission under N.D.C.C. Title 49, as amended. Otter Tail's certificate of incorporation and amendments to the certificate have previously been filed with the Commission in Case No. PU-09-677. The certificate and amendments are hereby incorporated by reference, as though fully set forth herein. A current certificate of good standing is attached as Appendix 1.

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<sup>4</sup> The Commission has granted applications for advance determination of prudence for wind facilities on the basis of reduced overall reliance on market purchases for utilities, among other things. *See Montana-Dakota Utilities Co., Advance Prudence—Thunder Spirit Wind Project*, Case No. PU-14-843, FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER at page 3 (June 30, 2015).

### III. COMMUNICATION AND SERVICE

The Company respectfully requests that the following persons be placed on the Commission's official service list for all communications in this docket:

Mark Bring  
Director of Legislative Affairs and  
Associate General Counsel  
Otter Tail Power Company  
215 S. Cascade Street  
Fergus Falls, MN 56538-0496  
[mbring@otpc.com](mailto:mbring@otpc.com)

Cary Stephenson  
Associate General Counsel  
Otter Tail Power Company  
215 S. Cascade Street  
Fergus Falls, MN 56538-0496  
[cstephenson@otpc.com](mailto:cstephenson@otpc.com)

### IV. STANDARD OF REVIEW FOR ADVANCE DETERMINATION OF PRUDENCE

Pursuant to N.D.C.C. § 49-05-16(1), the Commission may issue an order approving the prudence of a resource addition if:

- a) The public utility files with its application a projection of costs to the date of the anticipated commercial operation of the resource addition;
- b) The public utility files with its application a fee ... of one hundred seventy-five thousand dollars....;
- c) The commission provides notice and holds a hearing, if appropriate, in accordance with [N.D.C.C.] section 49-02-02; and
- d) The commission determines that the resource addition is prudent. For facilities located or to be located in this state the commission, in determining whether the resource addition is prudent, shall consider the benefits of having the resource addition located in this state.

For resource additions located in North Dakota, there is a rebuttable presumption that the resource addition is prudent.<sup>5</sup>

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<sup>5</sup> N.D.C.C. § 49-05-16(7).

## **V. STANDARD OF REVIEW FOR CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY**

N.D.C.C. § 49-03-01(1) provides, in pertinent part, that “[a]n electric public utility may not begin construction or operation of a public utility plant or system, or of an extension of a plant or system without first obtaining from the commission a certificate that public convenience and necessity require or will require the construction and operation.” Before the Commission may issue a CPCN, the electric public utility must file a certified copy of its articles of incorporation, and submit evidence that it has obtained, or will make application to obtain, the consent of any other public authority whose consent is required.<sup>6</sup> After notice and hearing, the Commission may (i) issue the certificate; (ii) refuse to issue the certificate; (iii) issue the certificate for only portions of the proposed facilities; or (iv) issue the certificate subject to such terms and conditions the Commission believes are necessary.<sup>7</sup>

This Application and supporting testimony meet these statutory prerequisites.

## **VI. PROJECT DESCRIPTION**

The Merricourt Project will be a 150 MW wind energy generation facility located near the small town of Merricourt, North Dakota, approximately fifteen miles south of Edgeley in McIntosh and Dickey Counties. The Project will consist of 75 two-MW Vestas V110 wind turbine generators and associated infrastructure, on a footprint comprising approximately 13,000 acres of land. The Project’s energy output is expected to be approximately 666,000 megawatt hours (MWh) annually, at a projected net capacity factor of 50.7%.

The Project will interconnect to Montana-Dakota Utilities Company’s Merricourt 230 kV substation located approximately 13 miles southwest of Kulm, North Dakota. Final

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<sup>6</sup> N.D.C.C. § 49-03-02(1).

<sup>7</sup> N.D.C.C. § 49-03-02(1)(a)-(d).

interconnection costs for the Project have not yet been determined. The Project is in the Midcontinent Independent System Operator, Inc. (MISO) interconnection queue and the August 2016 study group. The Company currently estimates that studies for the August 2016 study group will begin in the summer of 2017, with initial identification of interconnection costs for the Project becoming available in late fall of 2017.

The Merricourt Project will be developed and constructed by subsidiaries of EDF Renewable Energy, Inc. (EDF).

On November 16, 2016, the Company and EDF executed an Asset Purchase Agreement (APA) under which the Company will purchase the development assets of the Project. The corresponding Turnkey Engineering, Procurement, and Construction (TEPC) Agreement, under which EDF will construct the Project on a turnkey basis, was also executed.<sup>8</sup> The agreement terms are generally consistent with industry standards. By partnering with EDF under this transactional structure, Otter Tail is able to leverage EDF's market power for turbines and balance of plant contracts for the benefit of our customers, while retaining flexibility to address and mitigate development risks should they arise. Numerous conditions, including the Commission's approval of this Application, must be satisfied prior to closing of the asset purchase under the APA.<sup>9</sup> If regulatory approvals are not received, the Company has the right to terminate the APA and end its involvement in the Project.

Section IX of this Application provides additional information regarding how the terms of the Company's agreements with EDF reasonably allocate and mitigate development risk. The

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<sup>8</sup> The APA and the TEPC agreements are hundreds of pages, inclusive of schedules and other attachments, and thus are not being provided with this Application.

<sup>9</sup> Prior to closing of the asset purchase, EDF must also obtain an amended CSC for the Project to account for the turbine technology presently envisioned, and must also obtain approval to transfer the CSC, once amended, to Otter Tail.

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Merricourt Project is expected to be placed in service in 2019, a full year before the 2020 deadline required for capturing the full value 100% PTC. This affords a prudent buffer in the event of Project construction delay.

Otter Tail estimates the total capital cost of the Merricourt Project will be approximately [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS], which includes the Company's payments to EDF as well as reasonable oversight costs, taxes, anticipated transmission costs, and a reasonable contingency fund, yielding a levelized cost of energy of [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS]. The APA calls for payments to EDF of approximately \$34.7 million including a non-refundable [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS] signing milestone payment and the TEPC agreement calls for payments to EDF of approximately \$200 million to be paid in installments benchmarked to certain Project milestones. The Company has also budgeted approximately [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS] for the Company's direct costs and potential contingencies, which include Otter Tail's oversight of Project development, sales/use tax, construction contingencies in the TEPC agreement, potential interconnection costs, and unforeseen issues that can arise during development of a wind project. As demonstrated in Section VII below, and in light of potential contingencies, the Company's analysis of the Merricourt Project includes an additional capital sensitivity indicating that developing the Project remains prudent even at a capital cost of [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS]. Consequently, Otter Tail respectfully requests that the Commission find the addition of the Merricourt Project to be prudent, consistent with this analysis.

## VII. NEED FOR AND JUSTIFICATION OF THE RESOURCE ADDITION

As discussed in the Company's most recent Integrated Resource Plan (IRP),<sup>10</sup> the Merricourt Project is one component of the Company's two-part plan to meet our customers' electric needs, replace expiring capacity purchase agreements, and prepare for the 2021 retirement of the 1950s-era 140 MW PRB coal-fired Hoot Lake Plant.<sup>11</sup> The other component of this plan is the construction of Astoria Station – an approximately 250 MW frame-style, natural gas-fired, simple cycle generating facility.<sup>12</sup> Together, the components of the Company's two-part plan exemplify Otter Tail's all-of-the-above energy strategy by securing low-cost wind energy and capacity while bolstering grid reliability with dispatchable energy and load-following capability. This two-part plan includes enough capacity to reliably serve customers during periods of high demand for power, and enough affordable energy to serve customers long-term, making these resource additions prudent. As demonstrated in this Application, even without Astoria Station, the Merricourt Project remains prudent as a needed and least-cost energy resource affording material hedge value to the Company's customers.

### A. Need Drivers

As noted above, Otter Tail's development of the Merricourt Project is being driven by a need for capacity and energy precipitated by three factors: (1) load growth forecasts; (2) the expiration of a series of capacity purchase agreements; and (3) the 2021 retirement of Hoot Lake Plant Units 2 and 3.

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<sup>10</sup> The Company's most recent IRP was filed with the Commission on June 15, 2016, in Case No. PU-16-308.

<sup>11</sup> Hoot Lake Plant consists of Unit 2, built in 1959 with a nameplate rating of 53.5 MW, and Unit 3, built in 1964 with a nameplate rating of 75 MW. The units are capable of output greater than their nameplate ratings.

<sup>12</sup> Otter Tail has contemporaneously filed its ADP application for Astoria Station.



Hoot Lake Plant is aging. Given the magnitude of investment necessary to keep its units and associated infrastructure operational, and the anticipated cost of potential future environmental compliance upgrades, Otter Tail has been analyzing the plant's ongoing role in the Company's generation portfolio. The Company's analysis began in 2010 when material investments in Hoot Lake Plant were likely to be needed to comply with the Mercury and Air Toxic Standards (MATS) regulations in 2015. To that end, the Company conducted its Baseload Diversification Study in 2012 to determine the most prudent course of action. Based on that work, the Company determined that making minimal investments for MATS compliance and then retiring Hoot Lake Plant Units 2 and 3 in 2021 was the least-cost and most prudent course of action.

Otter Tail's 2012 analysis was sound and this course of action remains least-cost and prudent. The analyses performed as part of the Company's 2013 resource planning cycle also support the retirement of Hoot Lake Plant. While Hoot Lake Plant was designed and constructed as a baseload plant, starting around 2015, low energy market prices caused Hoot Lake Plant Units 2 and 3 to be dispatched infrequently. Unit 2 is now operated primarily in the winter as a source of building heat; Unit 3 has seen only limited operation year-round and is primarily operated only for required environmental testing and when MISO infrequently dispatches the unit. As a result, Hoot Lake Plant has essentially transitioned to a capacity resource and Otter Tail has been sourcing more of its energy from the MISO market.

Given the significant balance of plant investments needed to keep such aged units and associated infrastructure operational, the potential for future environmental upgrades, and the infrequency with which the units are dispatched, the Company can no longer justify continuing

to maintain and operate Hoot Lake Plant. Consequently, it is necessary to replace the plant's generation capacity.

Consistent with the Company's plans to retire Hoot Lake Plant in 2021, Otter Tail entered into a series of capacity purchase agreements to meet its obligation to serve customers. The capacity purchased through these agreements was intended to "bridge" the Company's capacity needs until Hoot Lake Plant is retired in 2021 and additional generation can be added to the Company's generation portfolio. Otter Tail timed the expiration of these capacity purchases with the retirement of Hoot Lake Plant so that it could aggregate its capacity needs to support the addition of new generation, rather than rely on the market. Capacity reserves are declining in MISO and, therefore, it may be difficult to obtain future economical replacement capacity agreements of sufficient size.<sup>13</sup> By aggregating the capacity needs attributable to the retirement of Hoot Lake Plant and the expiration of the capacity purchases, Otter Tail is able to add optimal complements of new generation.

The Company also continues to forecast future load growth, primarily driven by pipeline expansions. While load growth forecasts are inherently uncertain, anticipated load growth is an additional driver of the need for the Merricourt Project. Otter Tail's energy needs will also increase due to expiration of a 50 MW on-peak energy-only agreement in 2021. This energy-only contract is separate and apart from the capacity purchases referenced in the preceding paragraph.

These events require Otter Tail to take action. The Company's current analysis indicates that without replacement capacity and energy, Otter Tail will have a capacity deficit of

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<sup>13</sup> MISO has indicated that "supply has declined due to plant retirements in excess of new resource additions" and "continued resource adequacy will depend on uncommitted resources or resources with potential retirements." Midcontinent Independent System Operator, Inc., 2016 OMS SURVEY RESULTS at p. 1 (June 2016)

approximately 273 MW in 2021, and will need to source between 26% and 31% of its energy from the MISO market.

## **B. Developing the Two-Part Plan**

When a utility has a simultaneous capacity and energy need for a portion of its load-serving obligations, it typically seeks a resource addition that provides both capacity and energy at reasonable pricing, generally combined cycle generation. Combined cycle generation has the ability to follow load by ramping up and down throughout the day, while providing energy at lower marginal cost than a simple cycle generator and with lower capital cost than a baseload generator. However, a hybrid approach of wind-plus-gas, as in Otter Tail's two-part plan, can more optimally provide these capabilities.

As part of the Company's 2013 resource planning cycle, Otter Tail analyzed potential replacement scenarios in anticipation of Hoot Lake Plant's retirement. The Company used the Strategist resource planning model to aid in this analysis. To conduct this analysis, Otter Tail made available to the model several different resource selection options, including a 311 MW combined cycle generator, three different sized simple cycle generators, the repowering of Hoot Lake Plant to natural gas, and wind and solar resources. Notwithstanding the need for both capacity and energy, the Strategist model indicated that moving forward with a combined cycle plant would not be economic, nor would repowering Hoot Lake Plant to natural gas.

Rather, the results indicated that replacing Hoot Lake Plant's capacity with a simple cycle generator was the most economic outcome. The modelling results also indicated that if wind energy was priced at \$45/MWh, market purchases should be made to meet the Company's energy needs. However, when wind energy was priced at \$30/MWh, Strategist selected wind energy instead of market purchases for energy, signaling that acquiring 150 MW of wind

generation in 2021 would be the most economic choice to meet Otter Tail's energy needs. In the Company's 2016 resource planning cycle, Strategist continued to select a wind-plus-gas configuration in all scenarios analyzed. This analysis confirmed the prudence of moving forward with the two-part plan.

Additionally, a combination of low-cost wind and natural gas-fired simple cycle generation provides beneficial operating characteristics. The natural gas-fired simple cycle component of Otter Tail's two-part plan provides low-cost capacity and dispatchable energy. The addition of dispatchable energy provides both a hedge against high energy market prices and grid support, due to its capability to quickly start and then follow load. The wind component provides low-cost energy. Backing wind with gas captures the low-cost energy made possible by the current market for wind generation, while helping to ensure sufficient reliability through grid support from dispatchable simple cycle generation (which yields low-cost capacity). Simple cycle gas generation paired with wind is particularly attractive because the Company's service territory has some of the best wind resources in the country. Consequently, a wind-plus-gas configuration can provide many of the same economic and operational benefits of a combined cycle plant.

A wind-plus-gas configuration also has hedge and expansion value. If Otter Tail instead installed a combined cycle plant, the Company and its customers would face significantly more exposure to fluctuations in natural gas pricing. Because it will use less natural gas, a simple cycle plant mitigates that risk. Moreover, a natural gas simple cycle plant site can include sufficient space and design parameters to accommodate the potential future addition of combined cycle generation, if market conditions later warrant it. The wind component can provide low-cost energy from a zero-cost fuel source, providing both a market and fuel hedge. The

Company's service area has excellent wind resources, providing an economical generation resource with low potential for transmission congestion due to the wind resource's proximity to the Company's load.

## **VIII. PROJECT SELECTION AND ECONOMIC BENEFITS**

After Otter Tail selected the Merricourt Project as the least-cost wind resource available, Otter Tail refined its modelling efforts with specific information on the Merricourt Project (rather than the generic modelling used previously) to confirm the prudence of moving forward with the Project. Otter Tail's analyses indicate that the Merricourt Project will provide cost savings to customers of approximately \$112 million over the life of the Project and that such lifetime savings are maintained in all modelling sensitivities. Otter Tail expects that the savings will begin in the second year of the Merricourt Project's operation. Additionally, Otter Tail's modelling indicates that the addition of the Merricourt Project will reduce Otter Tail's reliance on energy markets to serve its customers from between 26% and 31%, to between 16% and 20%. These results demonstrate that the Merricourt Project is a prudent resource addition.

### **A. Least-Cost Resource Selected**

After the federal PTC was extended by Congress in December 2015, the Company undertook a solicitation process to probe the market for wind projects and assess project options. To do so, Otter Tail solicited wind project proposals from a host of experienced national wind developers. Otter Tail received ten proposals representing a total of seven different wind projects and six different developers. The proposals ranged from 99 MW power purchase agreements to 200 MW build-transfer arrangements with ultimate Otter Tail ownership. To ensure a reasonable comparison across the spectrum of proposals, Otter Tail calculated a levelized cost of energy for varied project life sensitivities. The turnkey, build-transfer Merricourt Project proposal had the lowest levelized cost of energy. On this basis, the

Merricourt Project was selected to provide the wind component of the Company's wind-plus-gas configuration.

## **B. Favorable Economic Impacts and Hedging**

The Merricourt Project's levelized cost of energy is almost 30% below the \$30/MWh threshold established in Otter Tail's resource planning for the selection of cost effective wind resources. With wind pricing this attractive, the Company's most recent resource planning cycle selected at least 200 MW of full value 100% PTC wind generation in 57 of the 58 scenario sensitivities modeled. Consequently, the Merricourt Project is prudent and will provide Company system cost savings by displacing higher-cost energy.

To confirm this assessment, Otter Tail used the Strategist modelling tool with updated assumptions based on the costs and expected operating characteristics of the Merricourt Project. In order to quantify system benefits, Otter Tail analyzed the costs of the Company's system with and without the Merricourt Project. Otter Tail also analyzed the cost of the Company's system with and without both the Merricourt Project and Astoria Station. The Company also examined capital sensitivities up to [NOT PUBLIC DATA BEGINS... ..NOT PUBLIC DATA ENDS] to account for potential development risk, including increased interconnection costs. The Company also examined scenarios in which it was assumed that the Project's turbines would have useful lives of up to 40 years.<sup>14</sup> The table below sets forth the results of this analysis. As shown, the Merricourt Project achieves lifetime system cost savings in all scenarios

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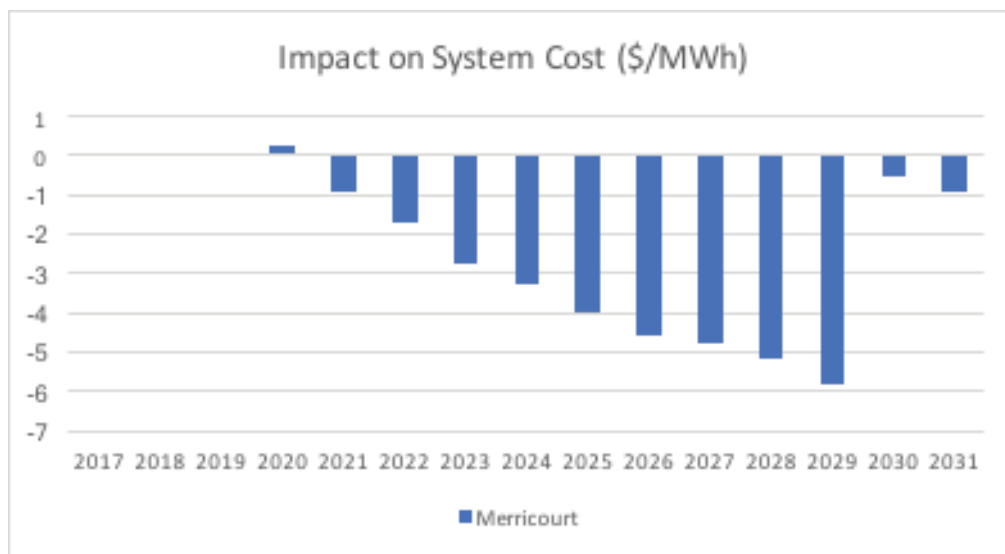
<sup>14</sup> Given the evolution of wind turbine technology, Otter Tail has examined the potential of extending the useful life of wind generators beyond the assumed 25-year useful life. Vestas has represented to Otter Tail that its equipment, if appropriately operated and maintained, may have an operating life of 40 years.

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analyzed, on a present value of revenue requirements basis.

Scenario	Present Value Utility Costs (000)	Difference from Base
Base Case (Market energy and capacity purchases)	2,375,341.80	
Base plus Merricourt	2,262,374.00	-112,967.80
Base plus Astoria and Merricourt	2,238,187.50	-137,154.30
Base plus Astoria and Merricourt High Capital case	2,251,998.80	-123,343.00
Base plus Astoria and Merricourt 40 year life	2,223,324.00	-152,017.80

The chart below illustrates the timing of the cost savings expected to be achieved by the addition of the Merricourt Project. Because of the initial capital outlay, customers will see a very modest impact to rates in the first full year of the Project's operation and will then enjoy savings through reduced fuel and purchased power costs for the remainder of the Project's life. Upon the 2029 expiration of PTCs available to the Project, savings will abate somewhat, but will continue as the Project is depreciated in Otter Tail's rate base.



The Merricourt Project is anticipated to generate approximately 666,000 MWh of energy. In addition to the system cost savings identified, with zero fuel cost the Merricourt Project provides price protection against future MISO energy price increases, price protection against future natural gas price increases, greater fuel source diversity in the Company's generation mix,

and the ability to capture significant value from tax incentives. Otter Tail's analysis indicates that the addition of the Merricourt Project will lower the Company's reliance on the MISO energy markets from between 26% and 31%, to between 16% and 20%. The Commission has found wind generation resource additions prudent on this basis<sup>15</sup> and should do so for the Merricourt Project.

### **C. Benefits of a Project Located in North Dakota**

Pursuant to N.D.C.C. § 49-05-16(1)(d), the Commission "shall consider the benefits of having the resource addition located in this state." Direct economic benefits of the Merricourt Project include approximately \$700,000 per year in lease payments to local landowners and approximately \$700,000 per year in property taxes. Further, the Project is expected to create greater than 150 construction jobs and 10 full-time positions, and inject millions of dollars in economic benefits to the local area. Some of the construction-related activity is likely to include North Dakota contractors and suppliers.

## **IX. PRUDENT CONTRACTING AND REASONABLE MITIGATION OF RISK**

Otter Tail has partnered with EDF for the development of the Project. EDF was the 2015 leader in U.S. wind projects, with 12% of the market share in installed capacity. By partnering with a strong national developer, Otter Tail gains the benefits of EDF's experience and market power to obtain economies of scale with respect to contracting and purchasing with experienced third-party suppliers and service providers. These economies of scale might not otherwise be

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<sup>15</sup> See *Montana-Dakota Utilities Co. Advance Prudence – Thunder Spirit Wind Project* Application, Case No. PU-14-843, FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER at 3, finding 11 (June 30, 2015) (finding that "[t]he Project provides price protection against future MISO energy price increases, price protection against future natural gas price increases, greater fuel source diversity in the Company's generation mix, and the ability to capture significant value from federal and state tax incentives").



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available to a utility of Otter Tail's size. Obtaining this leverage informed Otter Tail's contracting and risk mitigation strategy for the purchase of the Merricourt Project.

Otter Tail has entered into contracts with industry standard terms for a transaction of this type. Before moving forward with the Project, the Company engaged in significant due diligence to identify risk and seek ways to mitigate it. Otter Tail has reasonably identified and, through prudent contracting, mitigated the primary risks associated with the purchase of a turnkey wind farm. These risks include counterparty risk, interconnection cost risk, PTC risk, and real estate and environmental risk. Otter Tail's mitigation strategies support the prudence of the Merricourt Project.

**A. Counterparty Risk and Mitigation**

While EDF is a strong and experienced developer, counterparty risk is inherent with a transaction of this size. To that end, Otter Tail has secured a guaranty from EDF Energy Nouvelles S.A., EDF's parent and a large French utility, for up to **[NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS]**, which will serve to mitigate the risk of performance failure by EDF or its subsidiaries, and the risk that such failure could impair the Project from capturing 100% of the federal PTC. Additionally, Otter Tail's contracts allow it to step into the turbine supply and balance of plant agreements in the event EDF defaults, which would allow Otter Tail to construct the Project itself should circumstances warrant.

**B. Interconnection Cost Risk and Mitigation**

Any development of a project of this type presents risks related to interconnection costs. Otter Tail has anticipated these risks and has **[NOT PUBLIC DATA BEGINS...**

**...NOT PUBLIC DATA ENDS]** as protection.

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Interconnection cost risk is likely the Project's most significant risk. EDF has not yet completed the MISO interconnection process for the Merricourt Project and execution of a generator interconnection agreement (GIA) is not expected before the third quarter of 2018. Consequently, final interconnection costs are uncertain. To assess interconnection cost risk, Otter Tail has performed its own analyses to estimate potential final interconnection costs. The Company's preliminary analysis suggests a range of interconnection costs between [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS].

To address interconnection cost uncertainty, the Company negotiated contractual provisions with EDF that are designed to mitigate risk. Under the APA, the Company has agreed to pay the first [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS] in interconnection cost identified in the final GIA. Any interconnection costs between [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS] will be borne equally by the Company and EDF. If the interconnection costs are greater than [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS], the APA automatically terminates unless one of the parties provides notice that it will pay the exceedance. Given the Project's status in the MISO interconnection queue, these contractual provisions provide an appropriate threshold to allow Otter Tail and EDF to continually assess interconnection costs and achieve a mutually agreeable consensus once interconnection costs become more certain.

The Company has compared the Project and its estimated interconnection costs to other available projects (which face similar interconnection cost uncertainty) and believes the Merricourt Project's potential interconnection costs fall within a reasonable range. If interconnection costs later prove to be excessive, the Company can ultimately choose to allow

the APA to automatically terminate (absent EDF choosing to bear additional interconnection cost).

### **C. PTC Risk and Mitigation**

In December 2015, the federal PTC was extended for five years with a phase-down provision. To be eligible for 100% of the PTC, tax laws require that construction of a qualifying facility must have begun before January 1, 2017. The IRS issued guidance providing two alternative tests under which a project may qualify for the PTC: the “physical work test” and the “5% safe harbor.” Additionally, project construction must be completed by 2020 to qualify for the 100% PTC.

The Project is using the 5% safe harbor provision to qualify for 100% of the PTC. The 5% safe harbor allows wind projects to be considered as having begun construction if a minimum of 5% of a project’s total capital cost is incurred before January 1, 2017. Otter Tail’s contract with EDF requires EDF to meet the 5% safe harbor threshold by purchasing **[NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS]** project turbines from Vestas by December 31, 2016. The Company has confirmed that EDF complied with this contractual obligation. Additionally, EDF must indemnify the Company if certain PTC representations and warranties are breached and this indemnification is backed by a guaranty issued by EDF’s parent, as discussed above.

To provide additional certainty regarding the PTC, an opinion from a qualified tax attorney that the Project will qualify for 100% of the PTC is required as a condition to closing the transaction. Finally, in order to provide additional safeguards, the Project’s construction schedule calls for completion of the Project a full year before the 2020 deadline. The TEPC agreement provides for liquidated damages to be imposed against EDF if the Project is not

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timely constructed, providing a strong incentive for timely Project completion by EDF. These contractual terms and other requirements reasonably mitigate the risk of failing to qualify for 100% of the PTC.

**D. Real Estate and Environmental Risk and Mitigation**

Risk associated with real estate and environmental issues will largely be mitigated by actions EDF is contractually obliged to undertake. In order to address these risks, the Company negotiated prudent contractual terms and conditions, and engaged in significant due diligence, which included the assistance of an engineering firm specializing in environmental issues. Otter Tail is confident that these risks have been reasonably mitigated.

**X. CONCLUSION**

The Merricourt Project represents a remarkable value for our customers. Together with the addition of approximately 250 MW of simple cycle natural gas-fired generation in the next five years, it is an essential part of the Company's two-part plan to meet customers' energy and capacity needs. The Company has taken appropriate steps to reasonably mitigate the risks inherent with such a large resource addition. Therefore, pursuant to N.D.C.C. § 49-05-16, Otter Tail respectfully requests that the Commission issue an advance determination of prudence and grant a CPCN for the Company's addition of the Merricourt Project.

DATED: April 10, 2017

Respectfully submitted,

  
\_\_\_\_\_  
Mark Bring  
Director of Legislative Affairs and  
Associate General Counsel  
Otter Tail Power Company  
215 S. Cascade Street  
Fergus Falls, MN 56538-0496  
[mbring@otpc.com](mailto:mbring@otpc.com)

## APPENDIX 1



# *State of North Dakota*

## SECRETARY OF STATE



### CERTIFICATE OF GOOD STANDING OF

OTTER TAIL POWER COMPANY

The undersigned, as Secretary of State of the State of North Dakota, hereby certifies that OTTER TAIL POWER COMPANY, a Minnesota corporation, authorized to transact business in the State of North Dakota on February 24, 1914, and according to the records of this office as of this date, has paid all fees due this office as required by North Dakota statutes governing foreign corporations.

**ACCORDINGLY** the undersigned, as such Secretary of State, and by virtue of the authority vested in him by law, hereby issues this Certificate of Good Standing to

OTTER TAIL POWER COMPANY

Issued: March 28, 2017

A handwritten signature in cursive script, reading "Alvin A. Jaeger".

Alvin A. Jaeger  
Secretary of State

**STATE OF NORTH DAKOTA  
BEFORE THE  
PUBLIC SERVICE COMMISSION**

Otter Tail Power Company  
Advance Prudence – Merricourt Wind  
Application

Case No. PU-17-

Otter Tail Power Company  
PC&N – Merricourt Wind  
Application

Case No. PU-17-

DIRECT TESTIMONY

OF

BRADLEY E. TOLLERSON

ON BEHALF OF

OTTER TAIL POWER COMPANY

**Policy Testimony**

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April 10, 2017

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**I. INTRODUCTION AND QUALIFICATIONS**

Q. PLEASE STATE YOUR NAME AND TITLE.

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

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

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

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

A. The purpose of my testimony is to provide support for Otter Tail's application for an Advance Determination of Prudence (ADP) and a certificate of public convenience and necessity (CPCN) for the Company's proposed purchase, development, ownership, and operation of the Merricourt wind farm (Merricourt Project or Project), a 150-megawatt (MW) wind generation facility to be located near Merricourt, North Dakota. In my testimony, I address the following topics:

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

Additionally, I sponsor the Company's application for an ADP and CPCN and am available to answer questions regarding it.

**II. OVERVIEW OF THE PROJECT**

Q. PLEASE DESCRIBE THE MERRICOURT PROJECT.

A. The Merricourt Project is a 150 MW wind energy generation facility that will be located near the small town of Merricourt, North Dakota, approximately fifteen miles

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1 south of Edgeley in McIntosh and Dickey Counties. The Project will consist of 75  
2 two-MW Vestas V110 wind turbine generators and associated infrastructure, on a  
3 footprint comprising approximately 13,000 acres of land. The Project's energy output  
4 is expected to be approximately 666,000 megawatt hours (MWh) annually, at a  
5 projected net capacity factor of 50.7%. The Project will interconnect to Montana-  
6 Dakota Utilities Company's Merricourt 230 kV substation located approximately 13  
7 miles southwest of Kulm, North Dakota.

8  
9 Q. HOW IS THE PROJECT BEING DEVELOPED?

10 A. The project is being developed and constructed by subsidiaries of EDF Renewable  
11 Energy, Inc. (EDF) as a turnkey project. Under an Asset Purchase Agreement (APA),  
12 Otter Tail will, upon closing of the agreement, become owner of the development  
13 assets. Upon closing, pursuant to a corresponding Turnkey Engineering, Procurement,  
14 and Construction (TEPC) Agreement, EDF will construct the Project on a turnkey  
15 basis. Upon EDF's completion of construction, the Company will take delivery of a  
16 fully operational 150 MW wind farm. The Project is expected to be placed in service  
17 in 2019 ahead of the time frame for capturing the full value 100% federal production  
18 tax credit (PTC). Additional details regarding the Project and the agreements with  
19 EDF are discussed in the Direct Testimony of Harvey McMahon.

20  
21 Q. WHY IS THE COMPANY PROPOSING TO OWN, OPERATE, AND MAINTAIN  
22 THE MERRICOURT PROJECT RATHER THAN PURCHASE ENERGY UNDER  
23 A POWER PURCHASE AGREEMENT (PPA)?

24 A. The Company engaged in analyses to assess the benefits and risks of Company  
25 ownership of the Merricourt Project. The analyses were also informed by the  
26 Company's previous ownership of wind generation. Under the scenarios analyzed, the  
27 Merricourt Project is expected to result in net savings for our customers over the  
28 Project's life. Ownership of the Project allows our customers to reap these benefits  
29 over a longer period of time than would be possible under a PPA, thereby providing  
30 additional cost savings to Otter Tail customers.

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1 Q. WHAT ARE THE ESTIMATED COSTS FOR THE PROJECT?

2 A. The total cost of the Project is estimated to be approximately [NOT PUBLIC DATA  
3 BEGINS... ...NOT PUBLIC DATA ENDS], which includes the  
4 Company's payments to EDF as well as reasonable oversight costs, taxes, anticipated  
5 interconnection costs, and a reasonable contingency fund, yielding a levelized cost of  
6 energy of [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA  
7 ENDS]. Company witnesses Randy Synstelien and Harvey McMahon provide  
8 additional information regarding the cost of the Project in their respective Direct  
9 Testimony.

10

11 Q. IS THE MERRICOURT PROJECT NEEDED?

12 A. Yes. Otter Tail has forecasted a need for both capacity and energy as a result of:  
13 (1) forecasted load growth; (2) the expiration of capacity purchase agreements; and  
14 (3) the anticipated 2021 retirement of the Company's Hoot Lake Plant Units 2 and 3.  
15 The Company's current analysis shows that without adding replacement capacity and  
16 energy, Otter Tail will have a capacity deficit of approximately 273 MW in 2021.  
17 Under such a scenario, we would need to source between 26% and 31% of energy  
18 from the energy market.

19

20 As discussed in the Company's most recent Integrated Resource Plan (IRP),<sup>1</sup> the  
21 Merricourt Project is the initial component of the Company's two-part plan to meet  
22 our customers' growing energy needs. The other component of this plan is the  
23 construction of an approximately 250 MW frame-style, natural gas-fired, simple cycle  
24 generating facility known as Astoria Station. Additional details regarding the need for  
25 the Merricourt Project and the resource planning analysis supporting the need for the  
26 Project are addressed in the Direct Testimony of Brian Draxten and Randy Synstelien.

27

28

29

---

<sup>1</sup> Otter Tail's most recent IRP was submitted to the Commission on June 15, 2016, in Case No. PU-16-308.

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1

2 Q. HOW DID THE COMPANY SELECT THE MERRICOURT PROJECT?

3 A. As part of the Company's 2013 resource planning cycle, Otter Tail analyzed potential  
4 replacement scenarios in anticipation of the retirement of Hoot Lake Plant. This  
5 analysis indicated that market purchases should be made to meet the Company's  
6 energy needs when wind was offered for selection by the model at \$45/MWh. When  
7 wind was offered to the model at \$30/MWh it was selected, which showed that at that  
8 price or below, acquiring 150 MW of wind in 2021 was the most economic choice to  
9 meet Otter Tail's energy needs. In the Company's most recent, 2016, resource  
10 planning cycle, Strategist continued to select a wind-plus-gas configuration under  
11 updated assumptions in all scenarios analyzed. This confirmed the prudence of  
12 moving forward with the two-part plan.

13

14 Once the Company determined to move forward with a wind resource, and after the  
15 federal PTC was extended in December 2015, the Company undertook a solicitation  
16 process to probe the market and assess project options. Based on an analysis of ten  
17 proposals received in response to that solicitation, the Merricourt Project had the  
18 lowest levelized price of any project proposed during the solicitation process. On this  
19 basis, the Merricourt Project was selected to provide the wind component of the  
20 Company's wind-plus-gas resource addition.

21

22 After Otter Tail selected the Merricourt Project as the least-cost wind resource  
23 available to it, Otter Tail refined its modelling efforts with specific information related  
24 to the Merricourt Project (rather than the previous generic modelling) to confirm the  
25 prudence of moving forward with the Project. Otter Tail's analyses indicate that the  
26 Merricourt Project will provide cost savings to its customers of approximately \$112  
27 million over the life of the Project. Otter Tail expects that the savings will begin in the  
28 second year of the Merricourt Project's operation and last through the Project's life.  
29 Additionally, Otter Tail's modelling suggests that the addition of the Merricourt  
30 Project will reduce Otter Tail's reliance on potentially volatile energy markets to serve  
31 its customers from between 26% to 31%, to between 16% and 20%.

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2 Q. HOW WILL THE MERRICOURT PROJECT MEET CUSTOMER NEEDS?

3 A. The Merricourt Project will help keep energy prices for Otter Tail Power Company's  
4 customers as low as possible. The Merricourt Project is a cost-effective opportunity  
5 for the Company that provides numerous benefits including a hedge against future  
6 MISO energy market prices, a hedge against increases in future natural gas prices,  
7 greater fuel source diversity in the Company's generation mix, and the ability to  
8 capture value from available tax incentives.

9

10 **III. PRUDENCE OF THE RESOURCE ADDITION**

11

12 Q. IS THE PROJECT A PRUDENT RESOURCE ADDITION?

13 A. Yes. The Project will provide significant quantitative and qualitative benefits to our  
14 customers and will result in customer net savings. The Company has negotiated  
15 agreements with EDF that create an appropriate balance of the benefits and risks  
16 associated with our eventual ownership of the Project. Moreover, the Project enjoys a  
17 rebuttable presumption of prudence by virtue of being located in North Dakota.

18

19 Q. PLEASE SUMMARIZE THE QUANTITATIVE BENEFITS OF THE RESOURCE  
20 ADDITIONS.

21 A. The Company's Strategist modelling shows the Project will result in net savings for  
22 customers over its life. The levelized cost of the Merricourt Project is almost 30%  
23 below the \$30/MWh threshold established in Otter Tail's resource planning for the  
24 selection of cost effective wind resources. In other words, by adding this resource to  
25 the Company's generation mix, we expect to be able to reduce our overall rates on a  
26 present value of revenue requirements basis. Company witness Randy Synsteliën  
27 addresses the Strategist modelling in greater detail in his Direct Testimony.

28

29 Q. PLEASE SUMMARIZE THE QUALITATIVE BENEFITS OF THE RESOURCE  
30 ADDITIONS.

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1 A. In addition to anticipated cost savings, the Project will increase the diversity of Otter  
2 Tail's overall resource mix, reduce reliance on energy markets, and provide a hedge  
3 against natural gas price fluctuations. Moreover, the cost of wind energy is at all-time  
4 lows and can be locked-in for the life of the facility, providing a long-term stable  
5 energy market price hedge. Otter Tail's service territory includes some of the best  
6 wind resources in the country, providing an economical generation resource with low  
7 potential for transmission congestion due to its proximity to Otter Tail load.

8  
9 Further, the Merricourt Project, paired with Astoria Station, represents remarkable  
10 energy value for customers and prudently mitigates financial risk associated with  
11 exposure to the market. By pairing Astoria Station and the Merricourt Project we are  
12 also adding a dispatchable, load-following resource to provide reliability support and  
13 energy market hedging. As Mr. Synstelien discusses, the combination of the  
14 Merricourt Project and Astoria Station provides additional cost savings to Otter Tail's  
15 customers.

16  
17 Q. WHAT ARE THE ADDITIONAL BENEFITS TO NORTH DAKOTA IN  
18 CONSTRUCTING THE PROJECT?

19 A. In addition to low-cost energy for our North Dakota customers, landowner payments  
20 and tax base will yield benefits to North Dakota and local political subdivisions.  
21 Direct economic benefits of the Merricourt Project include about \$700,000 per year in  
22 lease payments to local landowners and approximately \$700,000 per year in property  
23 taxes. Further, the Project is expected to create greater than 150 construction jobs and  
24 10 full-time positions, and inject millions of dollars in economic benefits to the local  
25 area. Some of the construction-related activity is likely to include North Dakota  
26 contractors and suppliers. Additional benefits to all of Otter Tail's system, including  
27 North Dakota, include price protection against future MISO energy prices, price  
28 protection against increases in future natural gas prices, greater fuel source diversity in  
29 the Company's generation mix, and the ability to capture significant value from tax  
30 incentives.

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1

2

3 Q. ARE THERE RISKS ASSOCIATED WITH THE MERRICOURT PROJECT?

4 A. There are risks associated with the Project, just as there are risks with any project.

5 Risks associated with this particular project include counterparty risk, interconnection

6 cost risk, PTC risk, and real estate and environmental risks.

7

8 Q. WHAT RISKS EXIST WITH RESPECT TO INTERCONNECTION COSTS FOR  
9 THE PROJECT?

10 A. The Company is subject to interconnection cost risk due to the potential for higher  
11 than anticipated costs. Final interconnection costs have not yet been determined. The  
12 Project is in the Midcontinent Independent System Operator Inc. (MISO)  
13 interconnection queue, in the August 2016 study group. The Company currently  
14 estimates that studies for the August 2016 study group will begin in the summer of  
15 2017 with initial identification of interconnection costs for the Project becoming  
16 available in late fall of 2017.

17

18 Q. WHAT STEPS DID THE COMPANY TAKE TO MITIGATE THE RISKS  
19 RELATED TO INTERCONNECTION FOR THE PROJECT?

20 A. To address interconnection cost risk generally, the Company has [NOT PUBLIC  
21 DATA BEGINS... ...NOT  
22 PUBLIC DATA ENDS]. Additionally, we have negotiated contractual provisions  
23 designed to mitigate this cost risk. Company witness Harvey McMahon provides  
24 additional discussion in his Direct Testimony regarding this cost risk and the  
25 Company's efforts to address it.

26

27 Q. WHAT RISK EXISTS WITH RESPECT TO THE PROJECT'S QUALIFICATION  
28 FOR THE PTC?

29 A. To be eligible for 100% of the PTC, without phase down, tax laws require that  
30 construction of a qualifying facility must have begun before January 1, 2017.  
31 Additionally, project construction must be completed by 2020. The IRS issued



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1 guidance providing two alternative tests under which a project may qualify for the  
2 100% PTC: the “physical work test” and the “5% safe harbor.” The Project is using  
3 the 5% safe harbor. The overall cost of the Project would increase significantly in the  
4 absence of the 100% PTC.

5  
6 Q. WHAT STEPS HAS THE COMPANY TAKEN TO MITIGATE THE RISK OF THE  
7 PROJECT NOT QUALIFYING FOR THE PTC?

8 A. The Company negotiated contractual provisions to help ensure the Project will qualify  
9 for 100% of the PTC and has conducted due diligence to help ensure the Project will  
10 qualify. Additional details regarding the steps taken to mitigate the risk associated  
11 with the Project qualifying for 100% PTC are discussed in the Direct Testimony of  
12 Harvey McMahon.

13  
14 Q. WHAT ARE THE REAL ESTATE AND ENVIRONMENTAL RISKS RELATED  
15 TO THE PROJECT AND WHAT STEPS WERE TAKEN TO MITIGATE THOSE  
16 RISKS?

17 A. Before moving forward with the Project, the Company engaged in significant due  
18 diligence to identify potential risks and seek ways to mitigate those risks. Potential  
19 environmental and real estate risks include permitting, land use, siting, threatened and  
20 endangered species impacts, avian impacts, wetlands, and construction-related  
21 permitting requirements. Based upon its investigation, the Company determined that  
22 risk associated with real estate and environmental issues could largely be mitigated by  
23 actions EDF is contractually obliged to undertake. Company witness Harvey  
24 McMahon provides additional information regarding our due diligence efforts and  
25 contract provisions designed to mitigate risk related to the Project.

26  
27 Q. HAS THE COMPANY TAKEN STEPS TO MITIGATE ITS COUNTERPARTY  
28 RISK?

29 A. Yes. EDF is a strong partner with significant experience with wind development and  
30 partnering with such an experienced developer is reasonable and prudent. That said,  
31 Otter Tail’s contracts with EDF have several provisions to mitigate counterparty risk  
32 and construction risk, including indemnities, guarantees from EDF’s parent, and the



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1 ability for Otter Tail to step into key agreements for turbines and balance of plant  
2 construction. These provisions, and other industry standard protections provided for  
3 in the Company's agreements with EDF, are discussed in more detail by Mr.  
4 McMahon.

5  
6 Q. IS THE COMPANY FIT, WILLING, AND ABLE TO ASSUME OWNERSHIP AND  
7 OPERATE THE PROJECT?

8 A. Yes. The Company owns, operates, and maintains similar wind generation facilities  
9 elsewhere in North Dakota. The Company has operated these very successfully and  
10 our customers have been well-served by these generation additions.

11  
12 Q. IS THE TRANSACTION CONTINGENT UPON ANY APPROVALS FROM THIS  
13 COMMISSION?

14 A. Yes. The Company's obligation to pay EDF for the development assets and the  
15 parties' obligations to proceed with construction of the project under the TEPC  
16 include the following regulatory approvals: (1) approval of EDF's amended certificate  
17 of site compatibility (updated to account for the model of Vestas wind turbine  
18 generators to be supplied under the TEPC); (2) approval of EDF's transfer of the  
19 amended certificate of site compatibility to the Company; and (3) approval of this  
20 application for an ADP and CPCN.

21  
22 Q. DOES THE COMPANY HAVE THE ABILITY TO TERMINATE THE ASSET  
23 PURCHASE AGREEMENT IF REGULATORY APPROVALS ARE NOT  
24 RECEIVED?

25 A. Yes, if regulatory approvals are not received, the Company has the right to terminate  
26 the APA and end its involvement in the Project.

27  
28 Q. THE COMPANY FILED A CONTEMPORANEOUS ADP APPLICATION FOR  
29 THE ASTORIA PROJECT. DOES A DETERMINATION REGARDING THAT  
30 APPLICATION IMPACT THE MERRICOURT PROJECT?

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1 A. No. While the Company's two-part plan to meet our customers' energy needs with  
2 this Project and the Astoria Project provides least-cost capacity and energy for the  
3 Otter Tail system in the most prudent fashion, even without the gas generation  
4 component, the Merricourt Project remains prudent as a needed and least-cost energy  
5 resource providing low-cost energy and material hedge value to the Company's  
6 customers.

#### 8 IV. PRESENTATION OF WITNESSES

9  
10 Q. WHO ARE THE OTHER WITNESSES FOR THE COMPANY IN THIS  
11 PROCEEDING?

12 A. In addition to my policy testimony, the Company sponsors the following witnesses:

- 13 • **Brian Draxten** provides an overview of the Company's resource planning and a  
14 summary of the need for the Project;
- 15 • **Randy Synstelien** provides information about the resource planning analysis that  
16 was conducted by the Company to evaluate the cost-effectiveness of this resource;  
17 and
- 18 • **Harvey McMahon** provides more detailed information about the contracts  
19 necessary to acquire the Merricourt Project development assets and construct the  
20 Project. Mr. McMahon also discusses the ways in which Project risks are  
21 addressed.

#### 23 V. CONCLUSION

24  
25 Q. PLEASE SUMMARIZE YOUR TESTIMONY.

26 A. The Merricourt Project is a low-cost North Dakota based generation resource with a  
27 rebuttable presumption of prudence under North Dakota law. It is an essential  
28 component of a two-part plan to meet our customers' growing energy needs, replace  
29 expiring capacity purchase agreements, and prepare for the 2021 retirement of Hoot  
30 Lake Plant. As demonstrated in the application for ADP and CPCN, and supporting  
31 testimony, the resource addition is prudent because it is least-cost and the risks

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1 associated with the Company's ownership, and EDF's further development and  
2 construction, have been appropriately mitigated.

3

4 Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

5 A. Yes, it does.

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## STATE OF NORTH DAKOTA

## PUBLIC SERVICE COMMISSION

Otter Tail Power Company  
Advance Prudence – Merricourt Wind  
Application

Case No. PU-17-\_\_\_\_

Otter Tail Power Company  
PC&N – Merricourt Wind Application

Case No. PU-17-\_\_\_\_


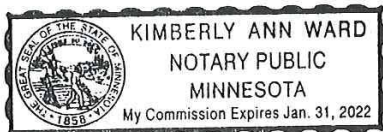
VERIFICATION

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<sup>th</sup> 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

**STATE OF NORTH DAKOTA  
BEFORE THE  
PUBLIC SERVICE COMMISSION**

Otter Tail Power Company  
Advance Prudence – Merricourt Wind  
Application

Case No. PU-17-

Otter Tail Power Company  
PC&N – Merricourt Wind  
Application

Case No. PU-17-

DIRECT TESTIMONY

OF

BRIAN DRAXTEN

ON BEHALF OF

OTTER TAIL POWER COMPANY

**Resource Planning Testimony**

April 10, 2017

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1                                   **I.           INTRODUCTION AND QUALIFICATIONS**

2

3    Q.    PLEASE STATE YOUR NAME AND TITLE.

4    A.    My name is Brian Draxten. I am Manager of Resource Planning for Otter Tail Power  
5           Company (Otter Tail or the Company).

6

7    Q.    PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

8    A.    I have a Bachelor of Arts degree in accounting with a minor in business finance from  
9           Moorhead State University. I have worked for Otter Tail for 35 years in various  
10           positions, including as a Rates Analyst, Manager of Market Research, and Manager of  
11           Budget. I have served in my current position as Manager of Resource Planning since  
12           January 2008.

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 application for an  
16           Advance Determination of Prudence (ADP) and Certificate of Public Convenience and  
17           Necessity (CPCN) for the Company's proposed purchase, development and operation of  
18           the Merricourt Wind Farm Project (the Merricourt Project or Project). My testimony  
19           principally addresses the need for this resource addition.

20

21                               **II.       NEED FOR AND JUSTIFICATION OF THE RESOURCE ADDITION**

22

23   Q.    PLEASE SUMMARIZE THE COMPANY'S PROPOSED RESOURCE ADDITION.

24   A.    Otter Tail is proposing to purchase, develop, own, and operate the 150 MW Merricourt  
25           Project, which will be located near Merricourt, North Dakota and will interconnect to  
26           Montana-Dakota Utilities Company's Merricourt 230 kV substation located southwest of  
27           Kulm, North Dakota. The Merricourt Project is one part of the Company's two-part plan  
28           to meet our customers' capacity and energy needs by 2021.

1 Q. WHY IS THIS RESOURCE ADDITION NEEDED?

2 A. Otter Tail is forecasting capacity needs of approximately 273 MW by 2021 and energy  
3 needs to mitigate reliance on the MISO energy markets. Together, the twin capacity and  
4 energy needs argue for the installation of energy and capacity resources by 2021.

5  
6 Q. HOW IS OTTER TAIL PROPOSING TO MEET ITS NEED FOR ENERGY AND  
7 CAPACITY RESOURCES?

8 A. Otter Tail is proposing a two-part plan to meet its load serving obligations by 2021. The  
9 Merricourt Project is the first part of the plan and will provide the low-cost energy  
10 component. Part two of the plan is the construction of an approximately 250 MW frame-  
11 style natural gas-fired simple cycle combustion turbine near the small town of Astoria,  
12 South Dakota (Astoria Station). Astoria Station will provide low-cost capacity and  
13 dispatchable energy, which facilitates reliability support through quick start capability to  
14 follow load and an energy market hedge.

15  
16 Together, the Merricourt Project and Astoria Station will, on a least-cost basis, reliably  
17 address Otter Tail's capacity deficit and provide energy for Otter Tail's customers,  
18 thereby reducing Otter Tail's projected 2021 reliance on the MISO energy markets from  
19 approximately 26% to 31% to approximately 16% to 20%.

20  
21 Q. WHAT IS DRIVING THIS NEED?

22 A. Several circumstances are driving Otter Tail's need for capacity and energy: (1) overall  
23 load growth, including the potential of pipeline load developing in the Company's service  
24 territory; (2) expiring capacity purchases; and (3) the anticipated 2021 retirement of the  
25 1950s-era 140 MW Powder River Basin (PRB) coal-fired Hoot Lake Plant in Fergus  
26 Falls, Minnesota.

27  
28 Q. HAS THE COMPANY BEEN ANALYZING THE FUTURE OF HOOT LAKE  
29 PLANT?

30 A. Yes. By way of background, Hoot Lake Plant consists of Unit 2, built in 1959 with a  
31 nameplate rating of 53.3 MW, and Unit 3, built in 1964 with a nameplate rating of



1 75 MW. Unit 1 (which was retired in 2005) and some of the plant site's original  
2 infrastructure were constructed in 1948 with a nameplate rating of 7.5 MW.

3  
4 Given the age and condition of Hoot Lake Plant, the magnitude of investment necessary  
5 to keep its units and associated infrastructure operational, and the possible cost of  
6 potential future environmental compliance upgrades, the Company has been analyzing  
7 the plant's ongoing role in the Company's generation portfolio. The Company's analysis  
8 began in 2010 when material investments in Hoot Lake Plant were likely to be needed to  
9 comply with the Mercury and Air Toxic Standards (MATS) regulations in 2015. To that  
10 end, the Company conducted its Baseload Diversification Study in 2012 to determine the  
11 most prudent course of action.

12  
13 Q. WHAT DID THE COMPANY CONCLUDE IN THE 2012 BASELOAD  
14 DIVERSIFICATION STUDY?

15 A. The 2012 Baseload Diversification Study evaluated three scenarios: (1) retiring Hoot  
16 Lake Plant in 2015; (2) adding equipment to comply with the MATS regulations and then  
17 retiring the plant in 2020; and (3) refurbishing the plant for long-term operation. The  
18 Study concluded that making minimal investments for MATS compliance and then  
19 retiring Hoot Lake Units 2 and 3 in 2021 was the least cost and most prudent course of  
20 action.

21  
22 Q. HOW DOES THE HOOT LAKE PLANT CURRENTLY OPERATE IN THE MISO  
23 MARKET?

24 A. Unit 2 is available to the MISO market, but market prices have been so low that it has  
25 been operated primarily in the winter as a source of building heat. Due to recent low  
26 market prices, Unit 3 has seen only limited operation year-round, and is primarily  
27 operated only for required environmental testing and as MISO infrequently dispatches the  
28 unit.

1 Q. WHY IS THE COMPANY RETIRING HOOT LAKE PLANT?

2 A. There are several reasons. First, because of the age of Hoot Lake Plant's infrastructure  
3 and its generation technology, it is comparatively expensive to keep operational. The  
4 Company can no longer justify such additional investment in the existing facilities.  
5 Second, future upgrades and investments could be necessary to comply with existing  
6 environmental regulations and the cost of such upgrades could be significant. Third, the  
7 plant's age and condition expose Otter Tail's customers to the risk of a major operational  
8 disruption at a time when replacement capacity and energy cannot be procured  
9 economically. This, in turn, could unnecessarily expose our customers to a volatile and  
10 potentially non-economic market for capacity and energy.

11  
12 For these reasons, Otter Tail has developed a plan to retire Hoot Lake Plant in 2021 and  
13 replace it with an optimal complement of generation resources.

14  
15 Q. WHAT CAPACITY PURCHASES DID THE COMPANY MAKE IN CONJUNCTION  
16 WITH ITS PLAN TO RETIRE HOOT LAKE PLANT IN 2021?

17 A. In conjunction with the Company's plan to retire Hoot Lake Plant in 2021, Otter Tail  
18 entered into several capacity purchase agreements to meet its obligations to serve  
19 customers:

- 20 • A 50 MW capacity-only contract with Great River Energy in 2014, increasing to  
21 100 MW from January 2015 through May 31, 2017;
- 22 • A 25 MW capacity-only contract with Great River Energy that begins on June 1,  
23 2017 and runs through May 31, 2019, and increases to 50 MW capacity-only from  
24 June 1, 2019 through May 31, 2021; and
- 25 • A 55 MW capacity-only contract with Great River Energy that begins on June 1,  
26 2017 and runs through May 31, 2019.

27 The capacity purchased through these agreements was intended to "bridge" the  
28 Company's capacity needs until Hoot Lake Plant is retired in 2021. Otter Tail arranged  
29 for this package of capacity purchase to expire coincident with the retirement of Hoot  
30 Lake Plant so that it could aggregate its capacity needs to support the addition of new  
31 generation, rather than rely on the market.

1 Q. HOW DO THE COMPANY'S LOAD FORECASTS INFORM DECISIONS RELATED  
2 TO HOOT LAKE PLANT?

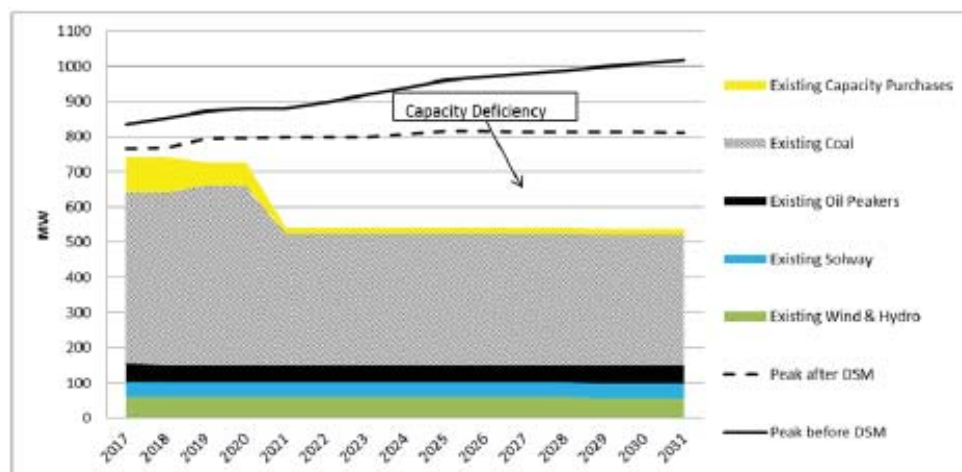
3 A. Otter Tail forecasts continued load growth. The Company's MISO obligation (non-  
4 coincident summer peak demand + transmission losses + reserve margins) for 2017 is  
5 795 MW; this is expected to increase to 938 MW by 2031. A significant portion of this  
6 load growth is anticipated to result from expansion of pipelines that transport oil from the  
7 Bakken Shale in North Dakota and from Canada. While load growth forecasts are  
8 inherently uncertain, the need to reliably serve customers with capacity and energy is an  
9 additional driver of the need for the Merricourt Project.

11 Q. ARE THERE AGREEMENTS AFFECTING THE COMPANY'S ANTICIPATED  
12 ENERGY NEEDS?

13 A. Yes. In addition to Otter Tail's capacity needs, energy needs will also increase due to the  
14 2021 expiration of a 50 MW on-peak energy-only contract. This agreement is separate  
15 from the capacity purchase agreements I previously described.

17 Q. WHAT DOES THIS CONFLUENCE OF NEED DRIVERS MEAN FOR OTTER TAIL?

18 A. Together, these events require Otter Tail to take action. The Company's current analysis  
19 indicates that without replacement capacity and energy, Otter Tail will have a capacity  
20 deficit of approximately 273 MW in 2021 and will need to source between approximately  
21 26% to 31% of its energy from the MISO market. This capacity deficit is illustrated  
22 below:



1 In response to these need drivers, Otter Tail needs to install new generation resources.

2  
3 **III. ANALYSIS OF OPTIONS TO MEET NEEDS**  
4

5 Q. WHAT OPTIONS DID THE COMPANY CONSIDER TO ADDRESS THE NEEDS  
6 YOU DESCRIBE ABOVE?

7 A. In its 2013 Resource Plan, Otter Tail analyzed a number of potential resources options,  
8 including: (1) a 311 MW combined cycle generator; (2) three different sized simple cycle  
9 generators; (3) conversion of Hoot Lake Plant to natural gas-fired generation; and (4)  
10 wind and solar resources. As described more fully in the testimony of Company witness  
11 Randy Synstelien, the Company used the Strategist resource planning tool to aid in the  
12 examination of the various options.  
13

14 Q. WHAT DID THE 2013 RESOURCE PLAN MODELLING CONCLUDE WOULD BE  
15 THE MOST ECONOMIC CAPACITY RESOURCE?

16 A. The Strategist model concluded that meeting Otter Tail's 2021 capacity need with a  
17 simple cycle generator was the most economic capacity resource.  
18

19 Q. DID THE COMPANY CONSIDER COMBINED CYCLE GENERATION?

20 A. Yes. Typically, when a utility has a simultaneous capacity and energy need for a portion  
21 of its load-serving obligation, it seeks resource additions that provide both capacity and  
22 energy at reasonable pricing, generally combined cycle generation. Combined cycle  
23 generation has the ability to follow load by ramping up and down throughout the day  
24 while providing energy at lower marginal cost than a simple cycle generator and with  
25 lower capital cost than a baseload generator. Therefore, the Company considered  
26 combined cycle generation.  
27

28 The 311 MW combined cycle plant utilized in the Strategist model would have been the  
29 smallest unit for Otter Tail to develop on its own consistent with its identified capacity  
30 need. As I mentioned, Strategist indicated that this generation addition would not be  
31 economic but, rather, that it would be more cost effective to install a capacity resource

1 through a simple cycle generator and source energy elsewhere, either in the MISO  
2 markets or through the installation of wind facilities, if pricing was sufficiently attractive.  
3 I note that a hybrid approach of wind-plus-gas can more optimally provide many of the  
4 same characteristics as combined cycle generation, which I discuss further later in my  
5 testimony.

6  
7 Q. DID OTTER TAIL CONSIDER REFURBISHING OR OTHERWISE CONTINUING  
8 TO OPERATE HOOT LAKE PLANT TO MEET ITS NEEDS?

9 A. Yes. Continued operation of Hoot Lake Plant was considered. However, based on the  
10 results of the Baseload Diversification Study, Otter Tail did not pursue continued  
11 operation.

12  
13 Q. WHAT DID THE 2013 RESOURCE PLAN MODELLING CONCLUDE WITH  
14 REGARD TO WIND GENERATION?

15 A. The 2013 modelling results indicated that market purchases should be made to meet the  
16 Company's energy needs unless wind generation is priced at or below \$30/MWh, at  
17 which point acquiring 150 MW of wind generation in 2021 was the most economic  
18 choice to meet Otter Tail's energy needs.

19  
20 Q. DID THE COMPANY CONTINUE TO ANALYZE REPLACEMENT SCENARIOS  
21 FOR HOOT LAKE PLANT IN SUBSEQUENT RESOURCE PLANNING CYCLES?

22 A. Yes. The Company's 2016 Resource Plan again analyzed a number of scenarios,  
23 including combined cycle generation, two sizes of natural gas simple cycle generation,  
24 wind, and solar. The 2016 resource planning analysis also included generic simple cycle  
25 generation with the characteristics of the Company's proposed Astoria Station and a  
26 generic low-priced wind project. The 2016 resource planning analysis confirmed the  
27 outcome of the 2013 resource planning cycle, especially in light of forecast load growth  
28 from the 2013 to the 2016 planning cycles.

29  
30 Q. DID THE 2016 RESOURCE PLAN CONSIDER ACQUIRING ENERGY FROM  
31 MARKET SOURCES, RATHER THAN NEW GENERATION FACILITIES?

1 A. At the time of the 2016 resource planning cycle, our assumptions had been updated to  
2 account for the extension of the federal Production Tax Credit (PTC) for wind projects  
3 and its impact on wind energy pricing. The Company's 2016 resource plan assumed  
4 wind energy pricing at approximately \$30/MWh. At this pricing, Strategist again  
5 selected a wind and gas combination in all scenarios analyzed.

6  
7 Q. WHAT DID THE 2016 RESOURCE PLAN CONCLUDE?

8 A. The 2016 Resource Plan concluded that the least-cost option was a wind-plus-gas  
9 configuration: the 2018 addition of 100 MW of wind generation and another 100 MW of  
10 wind generation in 2020, plus the 2021 addition of an approximately 248 MW simple  
11 cycle natural gas turbine.

12  
13 Q. HOW DOES THE WIND-PLUS-GAS CONFIGURATION COMPARE TO OTHER  
14 APPROACHES FOR MEETING A SIMULTANEOUS ENERGY AND CAPACITY  
15 NEED?

16 A. The combination of low-cost wind and a natural gas-fired simple cycle generator  
17 provides many beneficial operating characteristics. The simple cycle component  
18 provides relatively low-cost capacity and dispatchable energy. The wind component  
19 provides low-cost energy. Wind and natural gas simple-cycle generation have natural  
20 synergies. Wind is an intermittent, variable energy resource. Natural gas simple cycle  
21 generation demonstrates great flexibility in addressing wind generation's intermittency  
22 and variability, inasmuch as it is able to start and achieve full-output in a matter of  
23 minutes and is capable of cycling multiple times per day. Consequently, a simple cycle  
24 generator can provide load-following capability to support a reliable grid. Backing wind  
25 with gas captures the low-cost energy made possible by the current market for wind  
26 generation while helping to ensure sufficient reliability through grid support from  
27 dispatchable simple cycle generation, which includes low-cost capacity. Simple cycle  
28 generation paired with wind is particularly attractive to Otter Tail because the Company's  
29 service territory has some of the best wind resources in the country, with low potential for  
30 transmission congestion due to the proximity of the wind resource to Otter Tail's load. A

1 wind-plus-gas configuration can provide many of the same economic and operational  
2 benefits of a combined cycle plant.

3  
4 Q. WHAT ARE SOME OTHER ADVANTAGES OF A WIND-PLUS-GAS  
5 CONFIGURATION?

6 A. A wind-plus-gas configuration also has hedge and expansion value. If Otter Tail installed  
7 a combined cycle plant, the Company and its customers would have significant exposure  
8 to fluctuations in natural gas pricing. Because it will use less gas, a simple cycle plant  
9 mitigates that potential exposure. Moreover, a natural gas simple cycle plant site can  
10 include sufficient space and design parameters to accommodate the potential future  
11 addition of combined cycle generation, if market conditions later warrant it. The wind  
12 component can provide low-cost energy from a zero-cost fuel source providing both a  
13 market and fuel hedge. And the Company's service area has excellent wind resources,  
14 providing an economic generation resource with low potential for transmission  
15 congestion due to the resource's proximity to the Company's load.

16  
17 Q. IN LIGHT OF THESE NEED DRIVERS, WHAT HAS THE COMPANY  
18 CONCLUDED?

19 A. The Company believes that the two-part plan—the Merricourt wind project and Astoria  
20 Station—provides least-cost capacity and energy for the Otter Tail system in the most  
21 prudent fashion.

22  
23 **IV. THE MERRICOURT PROJECT IS PRUDENT**  
24

25 Q. HAS THE COMPANY CONTINUED ANALYZING THE PRUDENCE OF THE  
26 MERRICOURT PROJECT?

27 A. Yes. After Otter Tail selected the Merricourt Project as the least-cost wind resource  
28 available, Otter Tail refined its modelling efforts with specific information related to the  
29 Merricourt Project (rather than the generic modelling used previously) to confirm the  
30 prudence of moving forward with the Project. This modeling process and its results are  
31 described in more detail in the testimony of Company witness Randy Synstelien.



1 Q. WHY DOES THE COMPANY PROPOSE THE 150 MW MERRICOURT PROJECT  
2 INSTEAD OF TWO 100 MW WIND PROJECTS AS RECOMMENDED IN THE 2016  
3 RESOURCE PLAN?

4 A. The Strategist modelling in the 2016 Resource Plan used generic 100 MW units of wind;  
5 it did not have an option for using smaller units and it did not consider specific wind  
6 projects. As set forth in more detail in Mr. Synstelien's testimony, after the 2016  
7 Resource Plan was completed, the Company continued revising its model to analyze  
8 specific wind generation projects. This more targeted analysis concluded that addition of  
9 the 150 MW Merricourt Project is the specific project option that comes closest to the  
10 generic conclusion reached in the 2016 Resource Plan. Mr. Synstelien discusses how the  
11 output of the Merricourt Project will be reasonably close to that of the 200 MW of wind  
12 generation selected in the 2016 IRP.

13  
14 Q. GIVEN THAT 2021 IS THE YEAR OF HOOT LAKE PLANT'S RETIREMENT, WHY  
15 IS THE COMPANY PROPOSING TO DEVELOP THE MERRICOURT PROJECT  
16 EARLIER THAN 2021?

17 A. First, although the Company's capacity deficiency becomes most acute by 2021, it will  
18 grow years before then. That is one of the reasons the 2016 Resource Plan recommends  
19 the addition of wind in 2018 and 2020, rather than waiting until 2021. In addition, by  
20 embarking on the Merricourt Project now (resulting in a completion date in the third or  
21 fourth quarter of 2019), Otter Tail can capture the highly-competitive pricing made  
22 available by the 100% PTC for wind facilities before it expires. The impact of the PTC is  
23 described in more detail in the testimony of Company witnesses Randy Synstelien and  
24 Harvey McMahon.

25  
26 **V. CONCLUSION**

27  
28 Q. PLEASE SUMMARIZE YOUR TESTIMONY.

29 A. The Merricourt Project is a least-cost North Dakota generation resource. It is an essential  
30 component of a two-part plan to meet our customers' growing needs, replace expiring  
31 capacity purchase agreements, and prepare for the 2021 retirement of Hoot Lake Plant.



1 Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

2 A. Yes, it does.

3

## STATE OF NORTH DAKOTA

## PUBLIC SERVICE COMMISSION

Otter Tail Power Company  
Advance Prudence – Merricourt Wind  
Application

Case No. PU-17-\_\_\_\_

Otter Tail Power Company  
PC&N – Merricourt Wind Application

Case No. PU-17-\_\_\_\_

VERIFICATION

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

Brian Draxten, being first duly sworn on oath, deposes and says that he is the Manager of Resource Planning 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.

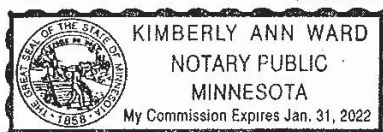
Dated this 10<sup>th</sup> day of April, 2017

  
Brian Draxten

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



Notary Public

My Commission expires 1-31-22

**STATE OF NORTH DAKOTA  
BEFORE THE  
PUBLIC SERVICE COMMISSION**

Otter Tail Power Company  
Advance Prudence – Merricourt Wind  
Application

Case No. PU-17-

Otter Tail Power Company  
PC&N – Merricourt Wind  
Application

Case No. PU-17-

DIRECT TESTIMONY  
  
OF  
  
RANDY SYNSTELIEN  
  
ON BEHALF OF  
  
OTTER TAIL COMPANY

**Economic Analysis Testimony**

**PUBLIC DOCUMENT – NOT PUBLIC DATA HAS BEEN EXCISED**

April 10, 2017

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**I. INTRODUCTION AND QUALIFICATIONS**

Q. PLEASE STATE YOUR NAME AND TITLE

A. My name is Randy Synstelien. I am the Principal Resource Planner for Otter Tail Power Company (Otter Tail or the Company).

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I have a Bachelor of Arts degree in accounting from Moorhead State University. I have worked for Otter Tail Power Company since 1991. My current job responsibilities as the Principal Resource Planner include ensuring that Otter Tail has sufficient capacity and energy resources to reliably and affordably meet customer needs.

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

A. The purpose of my testimony is to support the Company's application for an Advance Determination of Prudence (ADP) and Certificate of Public Convenience and Necessity (CPCN) in connection with the 150 MW Merricourt Wind Farm Project (the Merricourt Project or Project). In particular, I first address the levelized cost of the Project. Next, I discuss the analyses performed by Otter Tail through its Integrated Resource Plan (IRP) process. I then address the Company's wind project selection process. Last, I address the impact of adding the Project to the Company's integrated system as a Company-owned asset.

**II. PROJECT DESCRIPTION AND LEVELIZED COST**

Q. PLEASE DESCRIBE OTTER TAIL'S PROPOSED RESOURCE ADDITION.

A. The Merricourt Project is a 150 MW wind generating facility, which will be located near Merricourt, North Dakota and will interconnect to Montana-Dakota Utilities Company's Merricourt 230 kV substation located southwest of Kulm, North Dakota. The Merricourt Project is one part of the Company's two-part plan to meet our customers' capacity and energy needs by 2021. As discussed by Mr. McMahon, Otter Tail currently estimates the

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Project to have capital costs of approximately [NOT PUBLIC DATA BEGINS...

...NOT PUBLIC DATA ENDS].

Q. WHAT IS THE LEVELIZED COST OF THE MERRICOURT PROJECT?

A. Based on Otter Tail's capital cost estimates for the Project, the levelized cost of the Merricourt Project is approximately [NOT PUBLIC DATA BEGINS...  
...NOT PUBLIC DATA ENDS] assuming a 25-year useful life.

Q. HOW DID YOU CALCULATE THIS LEVELIZED COST?

A. I used the capital estimates provided by Mr. McMahon to calculate a revenue requirement for the Project based on Otter Tail's currently effective ratemaking requirements. More specifically, a spreadsheet cost of service model was used to determine the annual revenue requirements associated with the Project. The model takes into account the amount of generation expected from the Project, the capital cost of the Project, return on rate base, anticipated operation & maintenance expense, landowner payments, insurance, property tax, interest expenses, and the impact of the full value 100% Federal Production Tax (PTC). I then levelized the annual revenue requirements assuming a 25-year useful life.

### III. INTEGRATED RESOURCE PLANNING

Q. PLEASE DESCRIBE OTTER TAIL'S RESOURCE PLANNING APPROACH?

A. The Company's integrated resource planning (IRP) process utilizes generic demand-side and supply-side resources (e.g., energy efficiency/conservation and generation from wind, solar, natural gas, or coal) which are identified as potential components of the Company's preferred resource plan. Once a resource is identified as a part of the preferred plan in the IRP process, Otter Tail then seeks to identify the most cost-effective individual components for the preferred plan.

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1 Q. HOW DOES OTTER TAIL UNDERTAKE ITS IRP PROCESS?

2 A. Otter Tail uses resource planning software called Strategist to aid in the resource  
3 planning process. The goal of the resource planning process is to develop a single  
4 preferred plan, on an integrated system basis, which reliably and economically meets the  
5 capacity and energy needs of customers in the three states we serve, while complying  
6 with all legal and regulatory obligations and adequately addressing risk. Otter Tail  
7 provides service in three states on an integrated system basis, which affords significant  
8 benefits to customers due to the economies of scale achieved from planning and  
9 integrating generation assets on a larger scale. The resource planning process  
10 incorporates the full complement of the Company's existing fleet of generation, bilateral  
11 transactions, and demand-side management (DSM) programs, as well as evaluating new  
12 resource alternatives to meet customer demand, expiring bilateral transactions, and the  
13 anticipated retirement of existing generation resources. The preferred plan is considered  
14 under numerous scenarios relating to forecasted fuel prices (i.e., coal and natural gas),  
15 market energy prices, market capacity prices, load growth, and resource costs (including  
16 both capital and O&M).

17  
18 Q. IS THE PROJECT A RESULT OF OTTER TAIL'S IRP PROCESS?

19 A. Yes. In both our 2013 and 2016 IRP processes, we analyzed the impact of low-cost wind  
20 and the potential to include it in our preferred plan.

21  
22 Q. WHAT WERE THE RESULTS OF THE 2013 IRP PROCESS?

23 A. Our 2013 IRP process indicated it would be cost-effective to add wind to our system to  
24 meet system energy needs if wind was priced at or below \$30/MWh.

25  
26 Our 2013 IRP model started with the assumption that wind energy was priced at  
27 \$45/MWh. At that price, Strategist suggested that it would be more cost effective to  
28 source system energy from the Midcontinent Independent System Operator, Inc.'s  
29 (MISO) energy market, based on our then-current market pricing assumptions (which we  
30 purchased from a third-party vendor and which are considered industry standard data).  
31 However, when the Strategist was provided the option of selecting wind energy priced at

1 \$30/MWh, it selected approximately 150 MW of wind energy by 2021 in lieu of MISO  
2 energy market purchases.

3  
4 In almost every scenario analyzed, the 2013 IRP Process also selected a simple cycle gas  
5 generator to meet Otter Tail's needs by 2021. The selection of wind and simple cycle gas  
6 generation formed the basis of Otter Tail's two-part plan for resource additions by 2021.

7  
8 Q. WHAT WERE THE RESULTS OF THE 2016 IRP PROCESS?

9 A. Our 2016 IRP process confirmed the results of the 2013 IRP analyses. Strategist  
10 continued to select a wind-plus-gas configuration, with up to 200 MW of wind and  
11 approximately 250 MW of simple cycle gas generation by 2021.

12  
13 Q. PLEASE DESCRIBE SOME OF THE SPECIFIC WIND ASSUMPTIONS USED IN  
14 THE 2016 IRP AND THE MODELING RESULTS.

15 A. In the 2016 IRP, Otter Tail modeled generic 100 MW wind projects. The generic wind  
16 projects were modeled as 20-year fixed price PPAs. The wind pricing reflected the  
17 impact of the federal PTC, which is scheduled to be phased-out over the next several  
18 years. The table below shows the impact of the PTC phase-out and the base wind energy  
19 pricing modeled in the 2016 IRP.

20

Construction start	COD by end of	First full year of operation	PTC level	PPA base price (\$/MWh)
2016	2020	2021	100%	\$30.00
2017	2021	2022	80%	\$34.00
2018	2022	2023	60%	\$39.00
2019	2023	2024	40%	\$44.00
2020	2024	2025	0%	\$58.00

21  
22 Projects that start construction by the end of 2016 and reach commercial operation by the  
23 end of 2020 are eligible to receive the full 100% value of the PTC. The "full value PTC"  
24 projects were modeled at \$30/MWh for the entire 20-year planning horizon. The 2016  
25 IRP modelled 58 sensitivities. The amount of wind selected varied between 100 MW and  
26 600 MW. The table below shows the number of sensitivities and the quantity of wind



1 chosen at the various PTC levels. As expected, more expensive wind energy is less likely  
2 to be selected as part of the least-cost plan.

100 MW of 100% PTC wind	100 MW total wind	58 of 58 sensitivities
200 MW of 100% PTC wind	200 MW total wind	57 of 58 sensitivities
100 MW of 80% PTC wind	300 MW total wind	39 of 58 sensitivities
100 MW of 60% PTC wind	400 MW total wind	30 of 58 sensitivities
100 MW of 0% PTC wind	500 MW total wind	2 of 58 sensitivities
200 MW of 0% PTC wind	600 MW total wind	1 of 58 sensitivities

4  
5 Q. DO THESE IRP RESULTS REFLECT THE USE OF EXTERNALITY VALUES?

6 A. No. North Dakota law prohibits the consideration of externality values when analyzing  
7 the prudence of a proposed resource addition.

8  
9 One of the key policy differences between the states we serve is the use of externality  
10 values in the resource planning process. As a result of this difference, the Company  
11 performs a full of suite of sensitivities with externality values, as required in Minnesota,  
12 and a full suite of sensitivities without externality values, as required in North Dakota.  
13 The main difference in outcomes from these sensitivities was the quantity of generic  
14 wind resources selected. With externality values applied, 31 modeling runs selected  
15 between 400 MW and 600 MW of generic wind. Without externality values applied, 26  
16 modeling runs selected between 200 MW and 300 MW of generic wind. Our Company's  
17 preferred plan calls for only 200 MW of wind.

18  
19 Q. HOW DOES THE MERRICOURT PROJECT CONFORM WITH THE PREFERRED  
20 PLAN IF IT IS ONLY 150 MW?

21 A. Our IRP process generally analyzes generic resource additions. With respect to wind,  
22 Strategist was allowed to select generic wind resources only in 100 MW increments as  
23 part of our 2016 IRP. The results of the IRP indicated that adding up to 200 MW of wind  
24 by 2021 would be the most cost effective way to meet Otter Tail's energy needs. As I  
25 discuss further below, executing on the preferred plan requires Otter Tail to evaluate  
26 actual, rather than generic, wind resource additions available. Through our selection  
27 process, we identified the Merricourt Project as the least-cost wind addition available to

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1 the Company. At 150 MW it is consistent with the Strategist results indicating wind is a  
2 least-cost energy resource consistent with the generic results of our IRP modeling.

3  
4 Based on the expected net capacity factor of the Merricourt Project, we anticipate that it  
5 will generate approximately 666,000 MWh of energy a year. Under the assumptions  
6 utilized in our IRP modelling, the 200 MW of wind selected in our 2016 IRP was  
7 modelled as having an output of approximately 700,000 MWh of energy per year. By  
8 harvesting North Dakota's excellent wind resources, the Merricourt Project at 150 MW  
9 can produce nearly as much energy as the 200 MW of generic wind resource included in  
10 our 2016 IRP model.

11  
12 Q. IS THE AVAILABILITY OF THE PTC A DRIVER FOR THE RESOURCE  
13 ADDITION?

14 A. Yes. The availability of the federal PTC drives down the overall cost of wind generation  
15 to a level that makes it a least-cost and prudent energy source. Without the federal PTC,  
16 our IRP results indicate that it would be more cost-effective for Otter Tail to source its  
17 energy from the MISO energy markets in almost all scenarios analyzed. However, doing  
18 so would also expose the Company's customers to material energy market price risk.

19  
20 Q. PLEASE DESCRIBE HOW CONGRESSIONAL ACTION WILL RESULT IN PHASE-  
21 OUT OF THE PTC OVER THE NEXT SEVERAL YEARS.

22 A. Originally enacted in 1992, the PTC has been renewed and expanded numerous times,  
23 most recently by the Consolidated Appropriations Act, 2016 (H.R. 2029, Sec. 301) in  
24 December 2015.

25  
26 Action by Congress in December 2015 will phase down the value of the PTC for wind  
27 facilities commencing construction after December 31, 2016. The phase-down will occur  
28 annually in the following increments:

- 29       • For wind facilities commencing construction in 2017, the PTC amount is reduced  
30       by 20%;

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- 1           ● For wind facilities commencing construction in 2018, the PTC amount is reduced
- 2               by 40%; and
- 3           ● For wind facilities commencing construction in 2019, the PTC amount is reduced
- 4               by 60%.

5           The PTC is altogether unavailable after 2019 unless Congress reauthorizes it.

6

7           As a tax credit, the PTC is foregone federal tax revenue. Consequently, it does not

8           require federal funding per se. It is prudent for the Company to avail itself of the PTC

9           while it is available, because the entirety of the PTC's value is passed on to consumers in

10          the form of lower electric rates.

#### 11

#### 12                                   IV.       PROJECT SELECTION

#### 13

14   Q.     FOLLOWING THE STRATEGIST MODEL'S SELECTION OF AN INCREMENT OF

15           WIND, WHAT PROCESS WAS USED BY THE COMPANY TO SELECT THE

16           PROJECT?

17   A.     After the PTC was extended in December 2015, the Company undertook a solicitation

18           process to probe the market for wind projects and assess project options. Otter Tail

19           contacted a host of experienced national wind developers to solicit proposals for wind

20           projects. The Company evaluated PPA proposals as well as build-transfer project

21           proposals that the Company would ultimately own. One of the key considerations in the

22           evaluation was to ensure that the projects would be able to qualify for the full value 100%

23           PTC. In response to its solicitations, Otter Tail received ten proposals representing a total

24           of seven different wind projects and six different developers. The proposals ranged in

25           size from 99 MW to 200 MW. The proposals included a variety of ownership structures,

26           including Otter Tail-owned, PPAs, and hybrids of Otter Tail-owned and PPA. The

27           Merricourt Project was selected from these options because it was the least-cost proposal

28           on a levelized cost per MWh basis.

29

30   Q.     HAS THIS APPROACH TO SELECTING PROJECTS BEEN SUCCESSFUL IN THE

31           PAST?

1 A. Yes. This approach has been used in the Company's previous wind resource additions  
2 and has proven to be a cost-effective and flexible process that allows the Company to act  
3 on opportunities in the wind space when the PTC is available to benefit customers. This  
4 flexibility has allowed the Company to secure projects that maintain Otter Tail's  
5 historically low electric rates. In this instance, the approach will again allow our  
6 customers to realize the benefit of the full value PTC.

7  
8 Q. IS THE DECISION TO ADD ADDITIONAL WIND BASED UPON ECONOMICS?

9 A. Yes. For Otter Tail, the decision to add wind is purely driven by economics. The  
10 decision to add wind from the Project is not driven by Otter Tail's compliance obligations  
11 for Minnesota's renewable energy standard. Instead, we are prudently planning least-cost  
12 generation resource additions for all of our customers in the three states we serve.

13  
14 Q. ARE THERE OTHER DRIVERS OF THE DECISION TO ADD WIND TO THE  
15 OTTER TAIL SYSTEM?

16 A. Yes. Our IRP analyses indicate that the Project will primarily displace MISO market  
17 purchases, thereby providing a key hedge against energy market price volatility. In fact,  
18 without the Project, Otter Tail estimates that between 26% and 31% of its energy needs  
19 would be sourced from the MISO market, imposing significant market exposure on  
20 customers. As I describe further below, the addition of the Merricourt Project will bring  
21 our customer's exposure to energy market price volatility down to between 16% and  
22 20%.

23  
24 **V. ECONOMIC IMPACT OF THE RESOURCE ADDITION**

25  
26 Q. HAS OTTER TAIL ANALYZED THE ECONOMIC IMPACT OF THE PROJECT?

27 A. Yes. To determine if the Project had a favorable economic impact on the Company's  
28 customers, we analyzed a number of scenarios and compared them to our base case (i.e.,  
29 without any resource additions).

30  
31 Q. WHAT WERE THE RESULTS OF OTTER TAIL'S ANALYSIS?

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1 A. In all scenarios analyzed, the addition of the Merricourt Project lowered overall system  
2 costs. Depending on the scenario analyzed, cost savings were in the range of  
3 approximately \$112 million to \$152 million on a present value of revenue requirement  
4 (PVRR) basis.

5 Q. WHAT SCENARIOS WERE ANALYZED?

6 A. Otter Tail analyzed four scenarios.

7  
8 The first scenario simply compared the addition of the Merricourt Project to the base  
9 case, which does not include this resource. This isolates the direct impact of the  
10 Merricourt Project.

11  
12 The second scenario analyzed the impact of the Company's two-part plan by comparing  
13 the addition of both the Merricourt Project and Astoria Station to the base case, which  
14 does not include these resources. This scenario analyzes the economic impact of the  
15 Company's wind-plus-gas approach to meeting energy and capacity generation needs.

16  
17 The third scenario analyzed the impact of the Company's two-part plan compared to the  
18 base case but utilizing a high capital sensitivity. As discussed by Mr. McMahon, there is  
19 still considerable uncertainty regarding certain cost contingencies for the Merricourt  
20 Project. Consequently, Otter Tail wanted to determine if the Merricourt Project would  
21 remain cost-effective if those contingencies arose. To that end, Otter Tail analyzed a  
high capital sensitivity of [NOT PUBLIC DATA BEGINS...

24 ...NOT PUBLIC DATA ENDS].

25  
26 The fourth scenario analyzed the impact of the Company's two-part plan compared to the  
27 base case, but utilizing a 40-year life for the Merricourt Project. As Mr. McMahon  
28 discusses, due to the evolution of wind generation technology, Otter Tail explored the  
29 potential for extending the life of the Merricourt Project to 40 years and analyzed the  
30 economic impact of doing so.

1 Q. HOW WAS THE BASE CASE ESTABLISHED?

2 A. To assess impacts, Otter Tail established a baseline that assumes the retirement of Hoot  
3 Lake Plant in 2021, the expiration of bilateral capacity and energy purchases that the  
4 Company currently utilizes, and the addition of no new resources. The resulting plan has  
5 a considerable amount of energy and capacity purchased at forecasted market prices.

6  
7 Q. PLEASE SUMMARIZE THE RESULTS OF THE COMPANY'S ANALYSIS.

8 A. The table below identifies the PVRR impacts of the different scenarios analyzed.

9

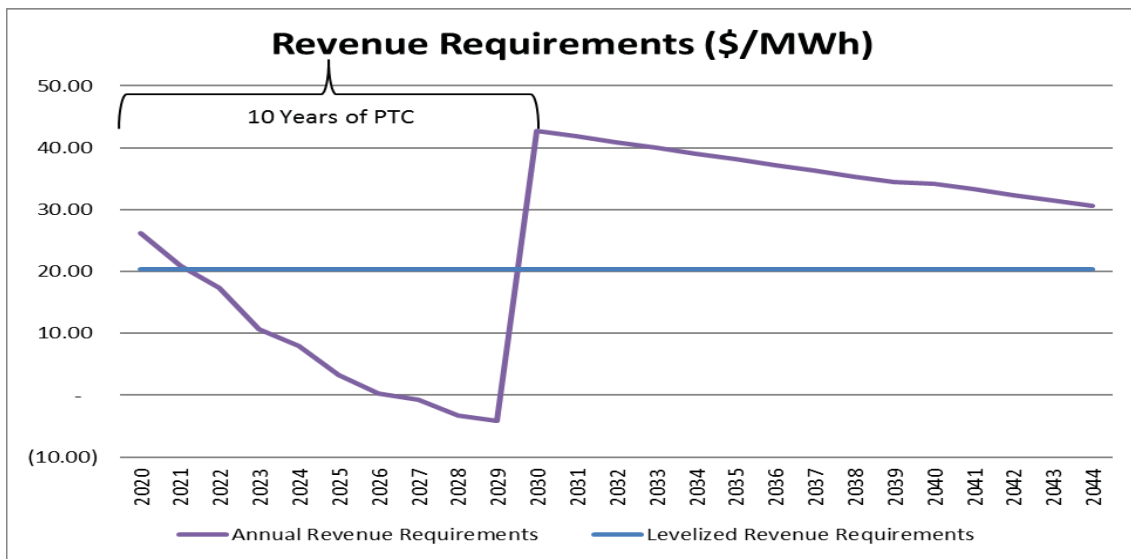
Scenario	Present Value Utility Costs (000)	Difference from Base
Base Case (Market energy and capacity purchases)	2,375,341.80	
Base plus Merricourt	2,262,374.00	-112,967.80
Base plus Astoria and Merricourt	2,238,187.50	-137,154.30
Base plus Astoria and Merricourt High Capital case	2,251,998.80	-123,343.00
10 Base plus Astoria and Merricourt 40 year life	2,223,324.00	-152,017.80

11  
12 Q. DO THE IMPACTS OF THE PROJECT CHANGE OVER TIME?

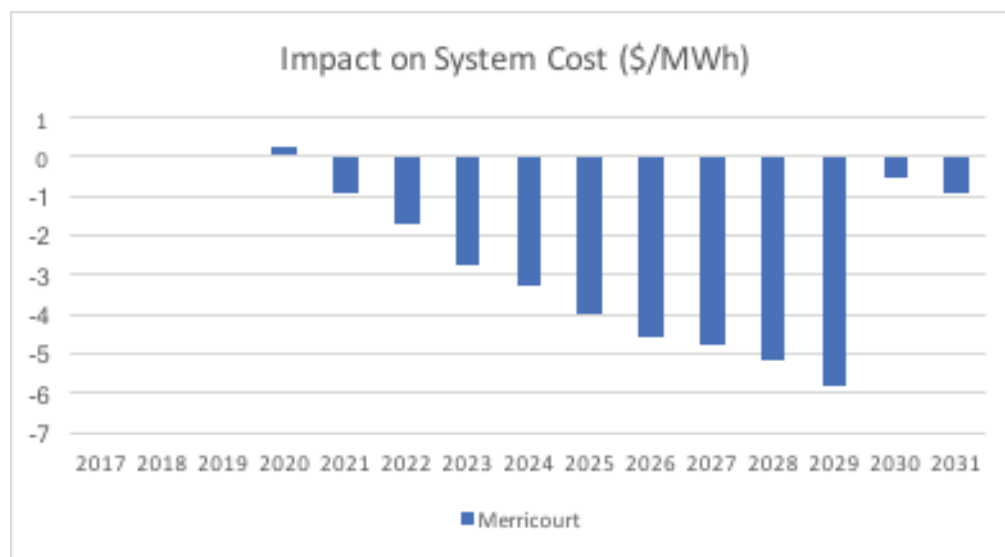
13 A. Yes. The nature of Company ownership of the Merricourt Project means that the impact  
14 to customers will vary over time. There will be a slight increase in rates when the Project  
15 is placed in service and then savings will begin shortly thereafter as the PTC is used.  
16 When the PTC (which is available for ten years) has been fully used by 2029, rates will  
17 increase but cost savings compare favorably to the base case.

18  
19 The chart below shows the revenue requirements curve for the Project.

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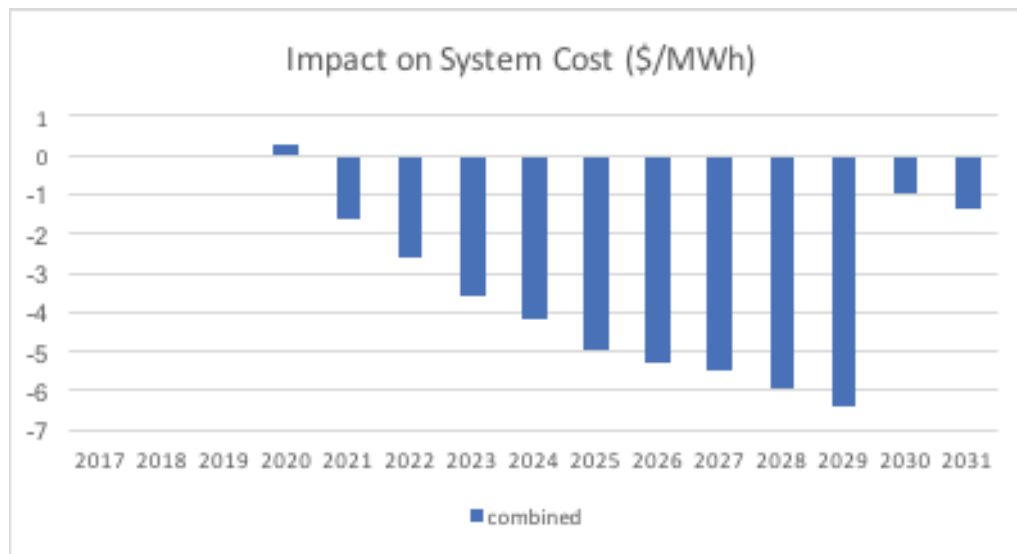
The chart below shows the cost impact of the Project on an annual basis compared to the base case. As shown, cost savings will begin in 2021 and continue through the life of the Merricourt Project.



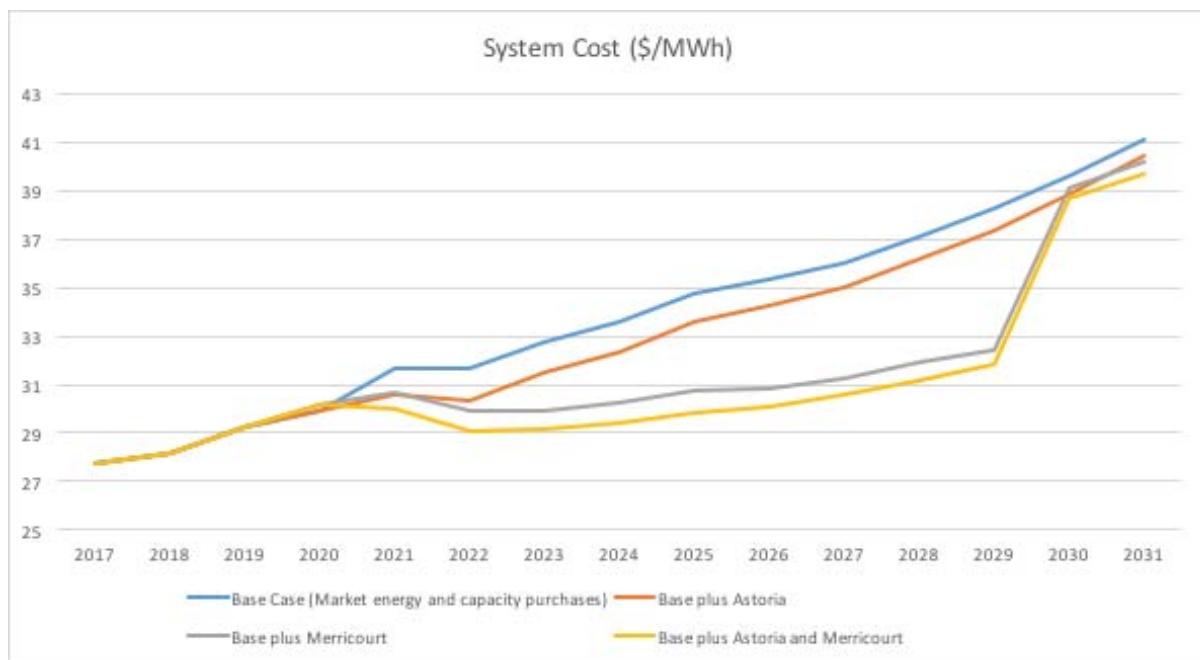
Q. HAS OTTER TAIL ANALYZED THE ANNUAL COST IMPACT FOR ITS TWO-PART PLAN?

A. Yes. The chart below shows the annual cost impact for the combined addition of the Merricourt Project and Astoria Station when compared to the base case.

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The chart below illustrates the annual cost impact of each scenario when compared to the base case.



Q. WHAT DO YOU CONCLUDE FROM THESE ANALYSES?

A. The Merricourt Project alone – and as part of the Company’s two-part plan – is cost-effective in all scenarios analyzed.



1

2

**VI. CONCLUSION**

3

4 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

5 A. Yes, it does.

6

7

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## STATE OF NORTH DAKOTA

## PUBLIC SERVICE COMMISSION

Otter Tail Power Company  
Advance Prudence – Merricourt Wind  
Application

Case No. PU-17-\_\_\_\_

Otter Tail Power Company  
PC&N – Merricourt Wind Application

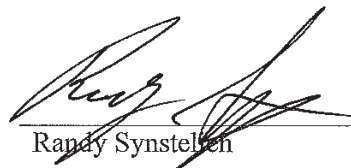
Case No. PU-17-\_\_\_\_

VERIFICATION


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

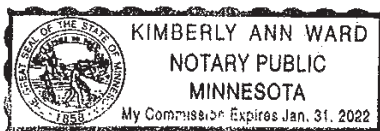
Randy Synstelien, being first duly sworn on oath, deposes and says that he is the Principal Resource Planner for Applicant Otter Tail Power Company; that the testimony and schedules submitted in the above-captioned matter under his name were prepared under his direction; and that he knows and verifies 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

  
Randy Synstelien

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

  
Notary Public  
My Commission expires 1-31-22



**STATE OF NORTH DAKOTA  
BEFORE THE  
PUBLIC SERVICE COMMISSION**

Otter Tail Power Company  
Advance Prudence – Merricourt Wind  
Application

Case No. PU-17-

Otter Tail Power Company  
PC&N – Merricourt Wind  
Application

Case No. PU-17-

DIRECT TESTIMONY  
  
OF  
  
HARVEY MCMAHON  
  
ON BEHALF OF  
  
OTTER TAIL COMPANY

**Project Development Testimony**

**PUBLIC DOCUMENT – NOT PUBLIC DATA HAS BEEN EXCISED**

April 10, 2017

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1                                   **I.           INTRODUCTION AND QUALIFICATIONS**

2

3    Q.    PLEASE STATE YOUR NAME AND TITLE

4    A.    My name is Harvey McMahon. I am Manager of Renewable Energy Generation  
5           Construction and Operation for Otter Tail Power Company (the Company or Otter Tail).

6

7    Q.    PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

8    A.    I have a Bachelor of Science degree in Electrical Engineering from the University of  
9           North Dakota and I am a registered Professional Engineer in the state of North Dakota.  
10          My past roles have included substation engineer, Division Engineer, and Manager of  
11          Sourcing and Supply Chain. In my present role I manage the operations and maintenance  
12          of our existing three wind plants as well as our Frame 5 gas plants. Additionally, I was  
13          the lead in the construction of our last three wind plants.

14

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

16   A.    The purpose of my testimony is to support the Company's application for an Advance  
17          Determination of Prudence (ADP) and Certificate of Public Convenience and Necessity  
18          (CPCN) for the 150 MW Merricourt Wind Farm (the Merricourt Project or Project). I  
19          describe the Company's plan to purchase the Project from subsidiaries of EDF  
20          Renewable Energy, Inc. (EDF), and to engage a subsidiary of EDF to construct the  
21          Project on the Company's behalf. I describe the contractual relationships between the  
22          Company and EDF, and explain how those contracts result in a commercially reasonable  
23          allocation of the rights and responsibilities for deploying 150 MW of cost-effective wind  
24          generation on behalf of Otter Tail's customers.

25

26   Q.    PLEASE PROVIDE A SUMMARY OF THE TOPICS FOR YOUR TESTIMONY.

27   A.    My testimony covers the following topics:

- 28           • I describe the overall transaction and budget.
- 29           • I describe the Asset Purchase Agreement (APA) with EDF, under which the
- 30           Company is proposing to purchase the development assets of the Merricourt Project.

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- I describe the Turnkey Engineering, Procurement, and Construction (TEPC) agreement, under which Otter Tail is proposing to contract with EDF to construct the Project on behalf of Otter Tail.
- I describe EDF's separate Turbine Supply Agreement (TSA) and Service & Maintenance Agreement (SMA) with Vestas (the wind turbine supplier), which will later be assumed by the Company as part of the overall transaction.
- I briefly describe EDF's intention to separately enter into a balance of plant (BOP) construction contract with a general contractor for construction of the Project.
- I describe some of the key commercial issues the Company has identified in its analysis of the Project and the Company's commercially reasonable and prudent response to those issues.

## II. PROJECT OVERVIEW

Q. PLEASE DESCRIBE THE MERRICOURT PROJECT.

A. The Project is a 150 MW wind energy generation facility that will be located near Merricourt, North Dakota. The Project will consist of seventy-five two-MW V110 Vestas wind turbine generators and associated infrastructure. The Project will have an estimated output of approximately 666,000 megawatt hours (MWh) per year at an expected net capacity factor of 50.7%.

Q. PLEASE DESCRIBE THE WIND TURBINES THAT WILL BE USED FOR THIS PROJECT.

A. EDF chose Vestas to supply the wind turbines for this Project. Vestas has over 35 years of experience in the wind energy field worldwide. During that time, Vestas turbines represent 82 GW (82,000 MW) of installed capacity from over 33,000 turbines. Vestas' two-MW platform is a durable and dependable machine, built on technology that has been repeatedly used in the field for more than a decade. Vestas has advised that it has more than 18,000 two-MW machines installed since 2000, making this a highly-reliable platform with a proven track record.

1 The V110 two-MW Vestas wind turbine that has been selected for the Merricourt Project  
2 is a commercially-proven and reliable turbine, with a strong availability and performance  
3 track record. This turbine features a 110-meter rotor diameter, on towers 80-95 meters  
4 (about 260-310 feet) in height. These turbines feature blades that are 54 meters in length  
5 to help capture the maximum amount of wind potential at a given site. These turbines  
6 have advantageous operating features, including a relatively low (3 meters per second)  
7 “cut in speed,” meaning that these turbines will produce energy even at relatively low  
8 wind speeds, thereby enhancing the net capacity factor of the Project. This turbine model  
9 delivers an advantageous rotor-to-generator ratio, enhancing the turbine’s capacity and  
10 maximizing the potential of the site.

11  
12 Q. WHAT IS THE EXPECTED LIFE OF THE TURBINES?

13 A. Industry standards have generally assumed a 25-year useful life for wind turbines and  
14 associated facilities. As wind turbine technology has continued to evolve, Otter Tail has  
15 investigated the potential useful life of the Vestas wind turbines used for the Project.  
16 Based on information provided by Vestas and an independent engineering firm, Otter  
17 Tail believes the Merricourt Project’s wind turbines could have a useful life of up to 40  
18 years when appropriately operated and maintained, and provided that prudent capital  
19 expenditures are made throughout the Project’s life.

20  
21 Q. BRIEFLY DESCRIBE THE SITE FOR THE MERRICOURT PROJECT.

22 A. The Project will be located near Merricourt, North Dakota, approximately fifteen miles  
23 south of Edgeley in McIntosh and Dickey Counties. The project footprint covers  
24 approximately 13,000 acres of land. The Project will interconnect to Montana-Dakota  
25 Utilities Company’s Merricourt 230 kV substation located approximately 13 miles  
26 southwest of Kulm, North Dakota. EDF has prepared a proposed site layout for  
27 placement of the wind turbines and associated infrastructure. EDF has obtained a  
28 Certificate of Site Compatibility (CSC) from the Commission in Case No. PU-08-932  
29 and is currently seeking to amend the CSC to reflect the anticipated turbine technology.

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1 Q. WHAT OTHER INFRASTRUCTURE WILL NEED TO BE DEVELOPED AS PART  
2 OF THE OVERALL PROJECT?

3 A. A variety of associated facilities will be required for the Project. EDF will need to  
4 construct site access roads sufficient for delivery of the component parts, associated  
5 construction cranes, and other equipment. A collector system and on-site collector  
6 substation will be built to efficiently aggregate generation from the turbines. Additional  
7 infrastructure will include communications systems; meteorological towers; an operations  
8 and maintenance (O&M) building; and monitoring, safety, lighting and measuring  
9 systems. Such infrastructure is standard for wind farm installations of this type and the  
10 associated costs are included in Otter Tail's overall Project cost estimates.

### 11 III. PROJECT COSTS AND SCHEDULE

12  
13  
14 Q. WHAT IS THE ESTIMATED PROJECT COST?

15 A. Otter Tail has budgeted approximately [NOT PUBLIC DATA BEGINS...  
16 ...NOT PUBLIC DATA ENDS] for the Merricourt Project. As with any project of this  
17 size and complexity, there is a risk that costs will increase. Otter Tail has prudently  
18 mitigated such risk through the transactional structure. As discussed in Mr. Synstelien's  
19 Testimony, Otter Tail has analyzed the cost effectiveness of the Merricourt Project at up  
20 to [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS].

21  
22 Q. PLEASE PROVIDE A HIGH-LEVEL CATEGORIZATION OF THIS ESTIMATED  
23 PROJECT COST.

24 A. The following categories of costs are in the Project estimate:

Category	Cost Estimate
APA Costs	\$34.7 million
TEPC Costs	\$200.5 million
Otter Tail Direct Costs	[NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS]
Total	[NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS]



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1 Q. PLEASE SUMMARIZE THE COSTS TO BE INCURRED UNDER THE APA.

2 A. Costs to be incurred under the APA will be approximately \$34.7 million, of which Otter  
3 Tail has already made a [NOT PUBLIC DATA BEGINS... ...NOT  
4 PUBLIC DATA ENDS] payment at signing of the APA. This signing milestone  
5 payment is nonrefundable except in limited circumstances. APA costs are for Otter  
6 Tail's purchase of the development assets from EDF. These include the costs for [NOT  
7 PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS] 5% safe harbor  
8 wind turbines necessary to ensure the Project qualifies for the full value 100% PTC. The  
9 costs also represent payment for the site, permits and associated contracts necessary for  
10 completion of the Project.  
11

12 Q. PLEASE SUMMARIZE THE COSTS TO BE INCURRED UNDER THE TEPC.

13 A. Costs to be incurred under the TEPC will be approximately \$200.5 million. TEPC costs  
14 are for EDF's provision of the balance of the turbines (i.e., all but the 5% safe harbor  
15 turbines), balance of plant construction, the collector substation, and the O&M building.  
16 At completion of EDF's work under the TEPC, Otter Tail will be taking possession of a  
17 turnkey wind farm.  
18

19 Q. PLEASE SUMMARIZE THE COSTS THAT MAKE UP THE OTTER TAIL DIRECT  
20 COSTS CATEGORY.

21 A. Otter Tail's direct costs for the Project include: (1) internal management costs; (2) taxes;  
22 (3) interconnection costs; and (4) project contingency.  
23

24 Q. PLEASE DESCRIBE OTTER TAIL'S DIRECT COSTS FOR INTERNAL  
25 MANAGEMENT.

26 A. With any project of this size and complexity, Otter Tail will incur internal management  
27 costs. These include costs for due diligence, legal fees, transactional matters,  
28 engineering, and internal capital labor and loadings. Otter Tail currently estimates its  
29 internal management costs to be approximately [NOT PUBLIC DATA BEGINS...  
30 ...NOT PUBLIC DATA ENDS].

31 Q. PLEASE DESCRIBE OTTER TAIL'S DIRECT COSTS FOR TAXES.

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1 A. As a purchase and sale transaction, Otter Tail is liable for sales and use taxes on its  
2 purchase of the Merricourt Project assets. North Dakota previously had afforded a sales  
3 and use tax exemption for materials used in the construction of a wind-powered electric  
4 generation facility, which Otter Tail supported as beneficial to customers. However, the  
5 sales and use tax exemption expired on January 1, 2017 after legislation to retroactively  
6 extend it was defeated during the 2017 legislative session. Consequently, Otter Tail's  
7 cost estimates include a sales and use tax liability of approximately [NOT PUBLIC  
8 DATA BEGINS... ...NOT PUBLIC DATA ENDS].

9  
10 Q. PLEASE DESCRIBE OTTER TAIL'S DIRECT COSTS FOR INTERCONNECTION.

11 A. Otter Tail's current cost estimates assume Project interconnection costs of [NOT  
PUBLIC DATA BEGINS...

12 ...NOT PUBLIC DATA ENDS]. Given the  
13 Merricourt Project's current status in MISO's interconnection queue, potential  
14 interconnection costs are uncertain at this time. Otter Tail's cost estimates are based on  
15 internal analysis by the Company's transmission engineering department.  
16  
17

18 Q. PLEASE SUMMARIZE THE CURRENT ESTIMATED RANGE OF COSTS FOR  
19 INTERCONNECTING THE PROJECT TO THE MISO SYSTEM.

20 A. Otter Tail estimates that final interconnection costs for the Project could be in the range  
21 of [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA  
22 ENDS].  
23

24 Q. WHY IS THERE A RELATIVELY BROAD RANGE OF POTENTIAL  
25 INTERCONNECTION COSTS?

26 A. The relatively broad cost range is due to the new MISO queue process and the large  
27 number of new generation projects in the August 2016 definitive planning phase. Indeed,  
28 the general vicinity of the Merricourt Project includes several thousand megawatts of new  
29 generation interconnection requests. If most or all of these requests move forward in the  
30 definitive planning phase, the interconnection costs may be on the higher end of the  
31 estimated range. However, many of the generation projects in the queue may not have

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1 counterparties willing to buy power from the projects and, thus, may drop out of the  
2 queue rather than make additional milestone payments necessary to remain in it. If many  
3 of the proposed generation projects do not continue in the MISO interconnection queue,  
4 the Merricourt Project's interconnection costs may be on the lower end of the range.

5  
6 Q. PLEASE DESCRIBE THE MERRICOURT PROJECT'S CURRENT STATUS WITH  
7 REGARD TO INTERCONNECTION COSTS.

8 A. EDF has entered the MISO interconnection queue for this Project and has been assigned a  
9 queue number. The interconnection request is in the August 2016 MISO study group.  
10 The Company currently estimates that studies for the August 2016 MISO study group  
11 will begin in the summer of 2017, with initial identification of necessary interconnection  
12 costs becoming available in late fall of 2017. No sooner than approximately September  
13 2018, a Project Generator Interconnection Agreement (GIA) or a Provisional  
14 Interconnection Agreement (PIA) is likely to be entered into with MISO. Because it is in  
15 the best interests of our customers to build a Project that qualifies for the full value 100%  
16 PTC, it is not feasible to wait until there is more interconnection cost certainty to move  
17 forward with a transaction. Consequently, we are moving forward with a transaction  
18 based on high-level estimates and prudent contractual allocation of interconnection cost  
19 risk (as discussed below).

20  
21 Q. PLEASE DESCRIBE OTTER TAIL'S DIRECT COSTS FOR PROJECT  
22 CONTINGENCY.

23 A. Development of a large wind project requires contingency planning and budgeting. Otter  
24 Tail's direct costs for Project contingency include balance of plant items such as the  
25 O&M building and meteorological tower placement. Construction weather contingencies  
26 and potential costs for underground facilities are also included. As previously indicated,  
27 Project interconnection is the subject of a broad range of cost. Uncertainty about final  
28 interconnection costs has been prudently mitigated in the contractual agreements with  
29 EDF. To help ensure that Otter Tail's cost estimates are sufficiently robust to address  
30 contingencies and interconnection cost uncertainty, the Company included [NOT  
31 **PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS]** of

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1 contingency in its Project cost estimate. Should Project costs exceed this amount, Otter  
2 Tail will be in a position to reassess the Project consistent with Mr. Synstelien's  
3 economic analysis.

4  
5 Q. WHAT IS THE PROJECT SCHEDULE?

6 A. In 2017 EDF will be pursuing a number of permits and conducting several activities,  
7 including:

- 8 1. Seeking an amended CSC;
- 9 2. Obtaining a determination of no hazard from the Federal Aviation Administration  
10 (FAA);
- 11 3. Finalizing easement and lease amendments;
- 12 4. Conducting a cultural resource survey;
- 13 5. Completing a Phase 1 Environmental Site Assessment (ESA);
- 14 6. Conducting an acoustics study; and
- 15 7. Taking delivery of [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC  
16 DATA ENDS] 5% safe harbor turbines in order to qualify the Project for the full  
17 value 100% PTC.

18  
19 Upon receipt of regulatory approvals, EDF's satisfaction of conditions precedent, and  
20 execution of a Project GIA or PIA, the Company anticipates closing on the purchase of  
21 development assets under the APA. Thereafter, pursuant to the TEPC, EDF and the  
22 prime contractor engaged by EDF will begin construction of the collection system, roads,  
23 foundations, substation, and O&M building. It is anticipated that construction will pause  
24 in December of 2018, depending on weather, and resume with turbine delivery and  
25 erection starting in June of 2019. Completion of the project is expected on or about  
26 October 31, 2019.

27  
28 Q. WAS THE PROJECT SCHEDULE PRUDENTLY DEVELOPED TO ENSURE THE  
29 COMPANY'S CUSTOMERS BENEFIT FROM THE PROJECT'S QUALIFICATION  
30 FOR THE FULL VALUE 100% PTC?

1 A. Yes. To qualify for the full value 100% PTC, construction of a qualifying facility must  
2 have begun before January 1, 2017. IRS guidance allows different methods for PTC  
3 qualification. One way in which wind projects can be considered to have begun  
4 construction is if a minimum of 5% of a project's total capital cost is incurred before  
5 January 1, 2017. This is known as the "5% safe harbor." The Project must also be  
6 placed in service by December 31, 2020 to qualify for the full value 100% PTC benefit.  
7 As described in more detail below, the Project is positioned well to meet these  
8 requirements. Moreover, our agreements with EDF place much of the risk of failure to  
9 qualify on EDF.

#### 11 IV. DESCRIPTION OF THE TRANSACTION AND AGREEMENTS

##### 13 A. Transaction Structure

14 Q. PLEASE PROVIDE AN OVERVIEW OF THE TRANSACTION.

15 A. At a high level, EDF will develop and construct the Merricourt Project on Otter Tail's  
16 behalf. EDF is required to provide the Company with a fully-developed Project that  
17 includes all necessary land rights and permits, and qualification for the full value 100%  
18 PTC.

19  
20 Thereafter, EDF will be responsible for the Project's construction on a turnkey basis.  
21 This type of transaction provides Otter Tail with a commercially reasonable structure,  
22 while mitigating many of the commercial risks associated with development and  
23 construction of a major infrastructure project.

24  
25 Q. WHY DID THE COMPANY CHOOSE THIS TYPE OF TRANSACTION  
26 STRUCTURE?

27 A. Purchasing the development assets and then requiring the developer to construct the  
28 Project on a turnkey basis is the most prudent transaction structure for this type of  
29 development and is consistent with industry standards. First, this transaction structure  
30 facilitates PTC eligibility for the Project. Second, this transaction structure properly

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1 allocates price and risk. Finally, this transaction structure has previously been used  
2 successfully by other utilities.

3  
4 This transaction structure makes particular sense with EDF, because it is a large and  
5 experienced wind developer with significant experience deploying Vestas turbines. EDF  
6 was the 2015 leader in U.S. wind energy projects, with 12% of the market share in  
7 installed capacity. It is reasonable and prudent to contractually rely on a large and  
8 experienced developer to provide a turnkey, fully operational wind farm under  
9 agreements that appropriately allocate risk.

10  
11 Q. WHAT ARE THE KEY AGREEMENTS FOR THE SELECTED TRANSACTION  
12 STRUCTURE?

13 A. The commercial relationship between EDF and the Company is structured around a series  
14 of key agreements that address the Company's fundamental goal of obtaining a least-cost  
15 Project, while placing a substantial amount of the commercial risk on the developer.

16  
17 The first major contract is the APA between four EDF entities, as Sellers, and the  
18 Company, as Buyer, for the proposed purchase of development assets associated with the  
19 Project. The second major contract is the TEPC, under which the Company is proposing  
20 to contract with a subsidiary of EDF to construct the Project. Once Otter Tail closes on  
21 its purchase of the Project's development assets under the APA, EDF will have the  
22 obligation to engineer, procure and construct the Project under the TEPC. Pursuant to the  
23 TEPC, the EDF subsidiary must supply the balance of turbines (i.e., all but the 5% safe  
24 harbor turbines purchased by Otter Tail under the APA) necessary for the Project.  
25 Additionally, the EDF subsidiary agrees to construct a fully integrated, turnkey facility.

26  
27 In addition to the two key agreements between Otter Tail and EDF, the transaction will  
28 include major agreements relating to the construction, operation and maintenance of the  
29 Project. Otter Tail will have collateral rights under each of these agreements in order to  
30 protect the Company.

1 Upon closing of the APA, EDF will execute a balance of plant (BOP) agreement with a  
2 major contractor to provide construction services for collector roads, an underground  
3 collector system, the substation, the operations and maintenance building, and erection of  
4 the turbines.

5  
6 EDF also has a Project turbine supply agreement (TSA) with the turbine supplier, Vestas.  
7 Turbines are the single largest capital expense for the Project. Finally, in order to enforce  
8 the wind turbines' warranties, EDF has a Service and Maintenance Agreement (SMA)  
9 with Vestas covering five years of wind turbine operation and maintenance. Both the  
10 TSA and SMA will assigned by EDF to the Company upon final completion of the  
11 Project.

12  
13 **B. APA Description**

14 Q. WHAT IS THE APA?

15 A. This is the agreement under which the Company will purchase the Project's development  
16 assets. Pricing under the APA is discussed earlier in my testimony.

17  
18 Q. PLEASE DESCRIBE HOW THE APA WORKS.

19 A. The Merricourt Project has been under development for some time. EDF has obtained  
20 land rights necessary for the Project and continues its work on permitting,  
21 interconnection and other major activities. Essentially, the APA calls for EDF to  
22 complete all of the development activities necessary prior to construction of the Project.  
23 Once these activities have been completed as required by the APA, the parties will close  
24 on Otter Tail's acquisition of the development assets, contingent upon regulatory  
25 approvals and conditions precedent to closing.

26  
27 Q. ARE THERE PROVISIONS IN THE APA THAT LIMIT OTTER TAIL'S  
28 OBLIGATION TO CLOSE IF EDF DOES NOT COMPLETE ITS WORK?

29 A. Yes. There is an extensive list of closing conditions that allow the Company to terminate  
30 the transaction upon a failure to achieve any one of the conditions. These closing

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1 conditions are industry standard requirements that are meant to ensure the Project has a  
2 reasonable likelihood of successful completion.

3  
4 Q. PLEASE DESCRIBE THE MATERIAL CLOSING CONDITIONS.

5 A. First and foremost, Otter Tail is not required to close on the asset purchase unless the  
6 required regulatory approvals, including the Commission's approval of this application,  
7 have been obtained. In addition, Otter Tail is not required to close unless the  
8 Commission authorizes EDF's amendment of the CSC and approves a transfer of the  
9 CSC from EDF to Otter Tail (for which EDF is obliged to seek regulatory approvals).

10  
11 The Project must also have entered into a final and binding GIA. It is EDF's  
12 responsibility to obtain the GIA.

13  
14 Other closing conditions include EDF's transfer to Otter Tail of all contracts and land  
15 rights necessary to complete the Project; EDF's provision of all purchased assets free and  
16 clear of material liens (other than those allowed by the APA); and EDF's confirmation  
17 that no material adverse event has occurred that would materially interfere with the  
18 Company's rights in the purchased assets. Finally, the APA contains a series of  
19 customary conditions for a transaction of this type.

20  
21 Q. WHAT HAPPENS IF REGULATORY APPROVALS ARE NOT RECEIVED?

22 A. If regulatory approvals are not received, the Company has the right not to close on the  
23 asset purchase under the APA and to terminate its involvement in the Project. In this  
24 case the signing milestone payment of [NOT PUBLIC DATA BEGINS...  
25 ...NOT PUBLIC DATA ENDS] would be forfeited. Between signing and closing, EDF  
26 expects that [NOT PUBLIC DATA BEGINS...  
27 ...NOT PUBLIC DATA ENDS] to achieve the requisite closing conditions. EDF has  
28 already spent approximately [NOT PUBLIC DATA BEGINS... ...NOT  
29 PUBLIC DATA ENDS] on PTC-qualified turbines before December 31, 2016.



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1 Q. DOES THE APA PROTECT OTTER TAIL IF EDF FAILS TO COMPLETE ITS  
2 WORK?

3 A. Yes. Because the APA is critical to the Company's success in deploying cost-effective  
4 wind generation on the system, Otter Tail insisted on a parent guarantee of EDF's  
5 obligations under the APA. I describe this in greater detail in the next section regarding  
6 the TEPC, since this protection is included in both agreements.

7  
8 **C. TEPC Description**

9 Q. WHAT IS THE TEPC?

10 A. This is the "turnkey" engineering, procurement, and construction agreement that provides  
11 the Company with contractual assurances that the Project will be constructed in a timely  
12 and cost-effective manner. It addresses EDF's obligation for the design engineering,  
13 procurement, construction, commissioning and start-up of the infrastructure facilities and  
14 the procurement, delivery, assembly, erection, installation, commissioning and start-up of  
15 the wind turbine generators. In other words, the TEPC calls for the infrastructure  
16 facilities to be fully integrated and operational, and for the wind turbine generators to be  
17 fully assembled, installed, tested and operational, all on a fixed-price, turnkey basis. EDF  
18 will, in turn, hire a major contractor to undertake the actual construction of the Project.  
19 Pricing under the TEPC is discussed earlier in my testimony.

20  
21 Q. WHAT IS THE PROPOSED TIMING OF THE WORK UNDER THE TEPC AND  
22 WHAT ARE THE CONSEQUENCES FOR DELAY?

23 A. The work under the TEPC is scheduled to begin after closing of the asset purchase under  
24 the APA. Timing is dependent on the MISO interconnection process and completion of  
25 the GIA for the Project. Otter Tail currently expects to close on the asset purchase in  
26 approximately September 2018. EDF would then construct roads, foundations, the  
27 underground collector system, and the collector substation between September and  
28 December of 2018. Starting in June of 2019, delivery of turbines would begin with  
29 erection and commissioning of turbines occurring between June and October of 2019.  
30 Final completion of the project is expected by December 31, 2019.

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1 This schedule was formulated to mitigate key risks for the Project. Delaying the closing  
2 of the APA and construction under the TEPC was designed to allow the new MISO  
3 interconnection process to unfold, and to afford the Company greater certainty on  
4 interconnection timing and cost.

5  
6 A second risk minimized by this schedule is the potential failure by EDF to ensure the  
7 Project is able to avail itself of the full value 100% PTC. EDF safe harbored 5% of the  
8 Project cost in December of 2016. However, to qualify for the full value 100% PTC,  
9 construction needs to be completed by December 31, 2020. In order to minimize risk, the  
10 Project schedule calls for Project completion a full year before that deadline. EDF is also  
11 required to pay delay liquidated damages for turbines that are not commissioned and  
12 operational by a date certain provided for in the agreements. In addition, the Company  
13 insisted that EDF agree to indemnity obligations and guarantees to further minimize this  
14 risk. Additional detail on these matters follows.

15  
16 Q. HOW MANY CONSTRUCTION WORKERS WILL BE USED TO CONSTRUCT THE  
17 MERRICOURT PROJECT?

18 A. The number of workers will vary during construction. Depending on the particular  
19 construction phase, there may be anywhere from 50 and 150 workers on site. Post-  
20 construction there will be approximately 10 permanent employees to operate and  
21 maintain the facility.

22  
23 **D. Financial Security Considerations**

24 Q. DO THE TRANSACTION DOCUMENTS PROTECT OTTER TAIL IF EDF FAILS TO  
25 COMPLETE ITS WORK?

26 A. Yes. Because the APA and TEPC are critical to the success of the Project, the Company  
27 insisted upon a guarantee from EDF Energy Nouvelles S.A., EDF's parent and a large  
28 French utility. EDF is a subsidiary of companies associated with Electricite de France, a  
29 French electric utility company headquartered in Paris and largely owned by the French  
30 state. Currently, EDF Energy Nouvelles S.A. is providing a [NOT PUBLIC DATA  
31 **BEGINS...**

1 ...NOT  
2 PUBLIC DATA ENDS]. At completion, EDF Renewable Energy will provide an  
3 additional [NOT PUBLIC DATA BEGINS...

4 ...NOT PUBLIC DATA ENDS]. The [NOT PUBLIC  
5 DATA BEGINS...

6 ...NOT PUBLIC DATA ENDS] is to mitigate the risk that EDF fails to complete  
7 construction in time to capture 100% of the PTC, before it is phased-down under existing  
8 federal law. If EDF failed to complete construction in time to capture 100% of the PTC,  
9 the Project would likely still be eligible for the application of the phase-down portion of  
10 the PTC. This also serves to mitigate risk.

11

12 E. TSA, SMA and BOP Agreements

13 Q. PLEASE DESCRIBE THE TSA, SMA AND BOP AGREEMENTS.

14 A. As discussed briefly above, to develop the Merricourt Project, EDF has entered or will  
15 enter into three key agreements: a Project-specific Turbine Supply Agreement (TSA); a  
16 Service and Maintenance Agreement (SMA) to enforce Vestas' warranty and obtain wind  
17 turbine operation and maintenance; and a Balance of Plant Agreement (BOP) to construct  
18 the facility.

19

20 Q. PLEASE EXPLAIN HOW THE TSA WILL WORK AND HOW EDF CAN UTILIZE  
21 THE PTC QUALIFIED TURBINES.

22 A. EDF has a master TSA with Vestas. EDF also has a Project-specific TSA with Vestas for  
23 this particular Project. The Project-specific TSA includes both the [NOT PUBLIC  
24 DATA BEGINS... ...NOT PUBLIC DATA ENDS] safe harbor PTC turbines and  
25 the [NOT PUBLIC DATA BEGINS... ...NOT PUBLIC DATA ENDS] remaining  
26 turbines. It was essential for EDF to enter into the Project-specific TSA rather than the  
27 Company, so that the PTC turbines could stay with the Project if the Company does not  
28 close on the asset purchase called for by the APA. If the Company was party to the  
29 Project-specific TSA and the APA did not close, the Company would have been required  
30 to find another project to ensure the turbines were eligible for the full value 100% PTC.

31

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1 Under the TSA, Vestas will construct, deliver, and commission all of the turbines. The  
2 Company has reviewed the Project-specific TSA and has confirmed that the terms are  
3 equal or better than industry standard. Additionally, if EDF defaults on its obligations to  
4 Vestas, the Company has step-in rights under the TEPC and the Project-specific TSA will  
5 then be assignable to the Company.

6  
7 Q. PLEASE DESCRIBE THE SMA.

8 A. The SMA is a contract that calls for Vestas to provide service and maintenance for the  
9 Project's wind turbines. Under the SMA, Vestas will provide five years of operation and  
10 maintenance services. The SMA is required in order to enforce the TSA warranties and  
11 other favorable terms and conditions that EDF was able to negotiate as a national  
12 developer. The SMA was entered into with EDF because it is a party to the TSA, and  
13 those two agreements are closely related.

14  
15 Q. DOES THE COMPANY HAVE RIGHTS UNDER THE TSA AND SMA?

16 A. The Company had an opportunity to review the TSA and SMA and found the terms and  
17 conditions to be reasonable and consistent with industry standard. While Otter Tail has  
18 only collateral rights in the agreements, under the structure of the transaction, both the  
19 TSA and the SMA will be assigned to the Company upon final completion of the Project.

20  
21 Q. WHAT IS THE ROLE OF THE BOP CONTRACT?

22 A. Upon closing of the APA, EDF will also execute a BOP agreement with a major  
23 contractor. The BOP contractor will construct the collector roads, underground collector  
24 system, the substation, the O&M building, and erect the turbines. The BOP contractor  
25 will be selected prior to closing of the APA and the Company will have the right to  
26 review and approve the design criteria prior to final selection of the BOP contractor.  
27 Additionally, the Company has approved a qualified bidders list for the BOP contractor.  
28 Since the Company has a fixed-price TEPC agreement with EDF, having EDF separately  
29 enter into the BOP contract reduces the Company's risk of cost escalation. The Company  
30 will have step-in rights to the BOP contract if EDF defaults.

V. REASONABLE RISK MITIGATION

Q. WHAT ARE THE MATERIAL RISKS THE COMPANY HAS IDENTIFIED RELATIVE TO IMPLEMENTATION OF THE MERRICOURT PROJECT?

A. The Company has identified several material risks that need to be managed in implementing this Project. They are as follows:

- Counterparty risk;
- Interconnection cost risk;
- The risk that the Project might not qualify for the full value 100% PTC; and
- Real estate and environmental risk.

Otter Tail has addressed each risk in a prudent and reasonable fashion.

A. Counterparty Risk

Q. HOW HAS OTTER TAIL MITIGATED COUNTERPARTY RISK?

A. While EDF is a strong and experienced developer, counterparty risk is inherent with a transaction of this size. To that end, Otter Tail has secured a guarantee from EDF's parent and contractual terms that will serve to mitigate the risk of performance failure. Additionally, Otter Tail has step-in rights in the event of EDF contractual defaults under the Project TSA, SMA, and BOP agreements, in order to be able to complete construction of the Project. I previously discussed these provisions in more detail.

B. Interconnection Cost Risk and Mitigation

Q. PLEASE SUMMARIZE THE INTERCONNECTION COST RISK ASSOCIATED WITH THIS PROJECT.

A. Generation projects inherently face interconnection cost risks. At this time, it is not possible to definitively know the actual Project interconnection costs that will be imposed by MISO. This reality yields uncertainty and interconnection cost risk for the Project.

1

2

3 Q. WHY IS IT NOT POSSIBLE TO PREDICT INTERCONNECTION COSTS AT THIS  
4 TIME?

5 A. As I noted above, the MISO queue is currently congested with many potential wind  
6 projects. If many of these projects drop out of the queue, it will substantially change the  
7 interconnection costs that may be allocated to remaining projects.

8

9 Q. HAS THE COMPANY MITIGATED INTERCONNECTION COST UNCERTAINTY  
10 IN ITS AGREEMENTS WITH EDF?

11 A. Yes. The Company negotiated APA contractual provisions to mitigate interconnection  
12 cost uncertainty. Earlier in my testimony, I discussed the specific contractual provisions  
13 and other measures Otter Tail has taken to prudently mitigate these risks.

14

15 Q. ARE THERE ADDITIONAL WAYS EDF AND THE COMPANY ARE MITIGATING  
16 INTERCONNECTION COSTS?

17 A. Yes. The Company is working closely with EDF on other potential opportunities to  
18 reduce interconnection costs. For example, during the MISO generator interconnection  
19 process, the Project may elect an alternative form of generator interconnection service  
20 likely to result in lower interconnection costs. This alternative has proven to be cost-  
21 effective and operationally sound for the Company in past wind projects with third party  
22 developers.

23

24 C. **PTC Compliance Risk**

25 Q. WHAT IS THE PTC COMPLIANCE RISK?

26 A. A significant element of Project value to the Company and its customers is the economic  
27 value associated with the PTC. In our negotiations with EDF, we included provisions  
28 that will maximize the likelihood that the full value 100% PTC is available.

29

30

31

1  
2 Q. WHAT HAS THE COMPANY DONE TO ENSURE THE PROJECT QUALIFIES FOR  
3 THE FULL VALUE 100% PTC?

4 A. Above, I described the requirements to qualify for the full value 100% PTC. I also  
5 described efforts to ensure that the 100% full value PTC is captured for the Merricourt  
6 Project: the purchase of the safe harbor turbines; a construction schedule calling for  
7 Project completion a full year before the PTC deadline; and contractual provisions  
8 between the Company and EDF. In addition, it is a condition to closing that Otter Tail  
9 have a tax lawyer opine that the Project will qualify for the full value 100% PTC.

10  
11 It is also important to note that even if the Project did not qualify for the full value 100%  
12 PTC, it could still qualify for a phased-down value of 80%, 60%, or 40%. In addition, if  
13 EDF fails to timely complete the Project to ensure full value 100% PTC qualification,  
14 EDF faces liquidated damages for delay. Moreover, EDF has a contractual indemnity  
15 obligation (backed by corporate guarantees) to mitigate this risk.

16  
17 We believe these provisions prudently manage the PTC compliance risk.

18  
19 **D. Real Estate and Environmental Risk**

20 Q. HOW HAS OTTER TAIL MITIGATED REAL ESTATE AND ENVIRONMENTAL  
21 RISK?

22 A. Risk associated with real estate and environmental issues will largely be mitigated by  
23 actions EDF is contractually obliged to take. In order to address these risks, the  
24 Company negotiated prudent contractual terms and engaged in significant due diligence,  
25 which included the assistance of an engineering firm specializing in environmental  
26 issues. Additionally, Otter Tail will comply with all terms of the Project's CSC and other  
27 permits. Through this work, Otter Tail is confident these risks have been prudently  
28 mitigated.

1  
2  
3  
4  
5  
6

**VI. CONCLUSION**

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.



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## STATE OF NORTH DAKOTA

## PUBLIC SERVICE COMMISSION

Otter Tail Power Company  
Advance Prudence – Merricourt Wind  
Application

Case No. PU-17-\_\_\_\_

Otter Tail Power Company  
PC&N – Merricourt Wind Application


Case No. PU-17-\_\_\_\_

VERIFICATION

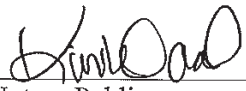
STATE OF MINNESOTA            )  
  ) ss.  
COUNTY OF OTTER TAIL        )

Harvey McMahon, being first duly sworn on oath, deposes and says that he is the Manager of Renewable Energy Generation Construction and Operation 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<sup>th</sup> day of April, 2017

  
\_\_\_\_\_  
Harvey McMahon

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

  
\_\_\_\_\_  
Notary Public  
My Commission expires 1-31-22

