414 Nicollet Mall
Minneapolis, MN 55401

PUBLIC DOCUMENT: TRADE SECRET DATA EXCISED

May 6, 2015

- Via Email and Federal Express -

Darrell Nitschke, Executive Director
North Dakota Public Service Commission
State Capitol Building, Dept 408
600 East Boulevard
Bismarck, ND 59505-0480

RE: IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR AN ADVANCE DETERMINATION OF PRUDENCE FOR THE 200 MW COURTENAY WIND FARM PROJECT
CASE NO. PU-15-____ .

Dear Mr. Nitschke:

Northern States Power Company, doing business as Xcel Energy (the Company), submits to the North Dakota Public Service Commission this Application for an Advance Determination of Prudence (ADP) for the 200 MW Courtenay Wind Farm Project.

The 200 MW Courtenay Wind Farm Project (Courtenay Project) is located in Stutsman County, North Dakota, and was identified for acquisition as a power purchase agreement (PPA) through the Company's February 2013 Request for Proposals for additional wind resources. The Company previously requested an ADP for the PPA in July 2013, and received the ADP on February 24, 2014.[1]

Due to changed circumstances described in the enclosed Application, the Company seeks to purchase the Courtenay Project and develop, construct, own, and operate it directly. Consistent with the Commission's requirements and the

[1] *Northern States Power Company Advanced Determination of Prudence – Courtenay Wind Project Application*, NDPSC Case. No. PU-13-706, ORDER ADOPTING SETTLEMENT, Revised Second Amended Comprehensive Settlement Agreement at 22 (Feb. 26, 2014).

Company's commitments, the Company respectfully requests an ADP for the Company's ownership of the Project.

The Company's Application contains trade secret information. In accordance with Section 69-02-09-02 of the North Dakota Administrative Code, an Application for Trade Secret Protection is being provided along with a single copy of the trade secret version of the Application and supporting testimony in a sealed envelope marked **TRADE SECRET-PRIVATE**.

An original and nine copies each of the public versions of our Applications are also being provided, along with the following:

- CD containing the public versions of the Application for a Certificate of Public Convenience and Necessity, Application for Transfer of the Certificate of Site Compatibility, and for Application for Trade Secret Protection; and
- To expedite the proceedings, a filing fee of $175,000, as provided for in N.D.C.C. § 49-03-02.

We look forward to working with the Commission in the review of this filing.

Sincerely,

David H. Sederquist

DAVID H. SEDERQUIST
Sr. Consultant, Regulation & Finance

Enclosures

STATE OF NORTH DAKOTA
BEFORE THE
PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR AN ADVANCE DETERMINATION OF PRUDENCE FOR THE 200 MW COURTENAY WIND FARM PROJECT

Case No. PU-15-_____

APPLICATION FOR TRADE SECRET PROTECTION

Northern States Power Company (Xcel Energy or Company) respectfully requests the North Dakota Public Service Commission (Commission) enter a trade secret protective order in the above referenced case pursuant to Chapter 69-02-09 of the North Dakota Administrative Code. The purpose of the requested protective order is to protect trade secret and commercial information as defined by N.D.C.C. § 44-04-18.4 from public disclosure pursuant to N.D.C.C. § 44-04-18 or any other applicable public disclosure laws.

1. A general description of the nature of the information sought to be protected.

The information for which the Company seeks protection includes cost information as well as contract terms regarding the Company's proposal to construct, own and operate the 200 MW Courtenay Project, a wind generating facility located north of Jamestown, North Dakota which has been marked as trade secret in our Application for Advance Determination of Prudence in the above-referenced Case.

The Company states that this information is commercial information because it is "information pertaining to buying and selling of goods and services that has not been previously publicly disclosed and that if the information were to be disclosed... would cause substantial competitive injury to the person from which the information was obtained," as provided in N.D.C.C. § 44-04-18.4(2)(a).

The Company further states that the cost information is trade secret because it is information that "(1) [d]erives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons that can obtain economic value from its disclosure or use; and (2) [i]s the subject of efforts that are reasonable under the circumstances to maintain the secrecy of the information," as provided in N.D.C.C. § 44-04-18.4(2)(d). The

Company further states that the information sought to be protected meets the definition of "trade secret" set forth in N.D.C.C. § 47-25.1-01(4).

2. Explanation of why the information derives independent economic value, actual or potential, from not being generally known to other persons.

The information could have economic value to potential vendors, contractors, and suppliers who may desire to bid to provide material or services to the Company. In particular, potential suppliers would know what the Company has determined to be the cost range for certain components of its proposal, and, consequently, the cost range could potentially serve as a floor below which no bidder would submit a bid price. Further, non-economic contract terms will provide potential vendors the opportunity to identify non-cost items of importance to the Company. Such a result could be harmful for the Company's customers.

3. An explanation why the information is not readily ascertainable by proper means by other persons.

The confidentiality of this information has been maintained by Xcel Energy. The information is not disclosed to the public or to persons other than employees or authorized agents who need to know the information to fulfill their responsibilities in connection with the Company proposal, or to third persons pursuant to nondisclosure agreement to maintain the confidentiality of the information.

The Company has requested that this information be treated as trade secret in all of its regulatory filings and other sharing of this information with governmental entities.

4. A general description of the persons or entities that would obtain economic value from disclosure or use of the information.

Other entities from which Xcel Energy purchases construction material and services could obtain economic value from disclosure of this information.

5. A specific description of known competitors and competitor's goods and services that is pertinent to the tariff or rate filing.

See response to No. 4 above.

6. A description of the efforts used to maintain the secrecy of the information.

See response to No. 3 above.

In accordance with Section 69-02-09-02 of the North Dakota Administrative Code, one copy of the trade secret material is provided in the enclosed sealed envelope which is labeled: **TRADE SECRET – PRIVATE**.

Respectfully submitted this 6th day of May, 2015

Northern States Power Company,

/s/

By: DAVID H. SEDERQUIST
SR. CONSULTANT, REGULATION & FINANCE

PUBLIC DOCUMENT: TRADE SECRET INFORMATION EXCISED
— PUBLIC DATA —

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF NORTH DAKOTA

IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR AN ADVANCE DETERMINATION OF PRUDENCE FOR THE 200 MW COURTENAY WIND FARM PROJECT

Case No. PU-15-_____

APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE

I. INTRODUCTION

Northern States Power Company, doing business as Xcel Energy, respectfully submits to the North Dakota Public Service Commission this Application for an Advance Determination of Prudence (ADP) pursuant to North Dakota Century Code Section 49-05-16, the Settlement Agreement in Case No. PU-07-776, and the Company's commitments in Case No. PU-12-59. This ADP request is for 200 MW of wind generation to be added to the NSP System through the Company's development, construction, ownership, operation, and maintenance of the Courtenay Wind Farm Project (Courtenay Project). This 200 MW resource addition represents a prudent opportunity for the Company to ensure development of generation in North Dakota and to continue to meet the needs of all the customers we serve within our five-state integrated system in a cost-effective manner.

The Courtenay Project is a 200 MW wind resource in Stutsman County, North Dakota that the Company identified for acquisition through its February 2013 Request for Proposals (RFP) for additional wind resources. On July 26, 2013, the Company requested an Advance Determination of Prudence (ADP) for purchasing the output of the Courtenay Project through a power purchase agreement (PPA) in Case No. PU-13-706. On February 26, 2014, the Commission granted the requested ADP.[1]

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[1] *Northern States Power Company Advanced Determination of Prudence – Courtenay Wind Project Application*, NDPSC Case. No. PU-13-706, ORDER ADOPTING SETTLEMENT, Revised Second Amended Comprehensive Settlement Agreement at 22 (Feb. 26, 2014). Because under the PPA arrangement the Company would not own the Project, no Certificate of Public Convenience and Necessity (CPCN) was requested by the Company or issued by the Commission. The Company has separately requested the issuance of a CPCN in Case No. PU-15-175 for our ownership of this project. The Company has also separately requested in Case No. PU-15-174, the transfer the Certificate of Site Compatibility that had previously been issued in Case No. PU-13-64.

Circumstances surrounding the Courtenay Project have changed since the PPA was approved. Unfortunately, Geronimo Energy, LLC (Geronimo), the developer of the Courtenay Project, has not been able to secure financing or a third party equity investor for the Project, and all parties have determined in good faith the PPA cannot be performed in accordance with its terms. If the Company does not step in to complete the Courtenay Project, we are concerned that the Project will not be built at all.

Having conducted additional due diligence, and updating our assumptions, in association with the Company's proposed ownership of the Courtenay Project, our analyses indicate that development of this resource addition remains viable under a different arrangement whereby the Company acquires, develops, and owns the Project on behalf of our customers.

Taking steps to remedy the issues threatening the Courtenay Project is consistent with the Company's commitment to seek opportunities to invest in generation within North Dakota. Rather than risk project failure, taking an ownership role will provide benefits to our customers and to North Dakota. Not only are the landowners and nearby communities hosting this Courtenay Project counting on the lease payments, community support, and tax base provided by this Courtenay Project, but the Company is also using North Dakota-based contractors and labor to construct this facility. And the ultimate success of this Project will further enhance the Company's geographic diversity in its supply portfolio.

The proposed transaction will be in the form of the acquisition of a limited liability company (Courtenay Wind Farm LLC), a subsidiary of Courtenay Wind Holdings LLC that holds all the assets of the facility. These companies are, in turn, affiliates of Geronimo. The Company then plans to merge the LLC into the Company and take over development of the Project assets directly. In addition, we recently entered into the turbine supply agreement (TSA) and balance of plant construction (BOP) contract directly with the suppliers. We intend to complete the Project, and own and operate the facility by December 31, 2016 to take advantage of the available federal Production Tax Credit (PTC).

Overall, the Courtenay Project's costs are favorable under this structure, and it remains an important part of our future generation portfolio. With Company ownership, the Courtenay Project offers attractive pricing for our customers and fits within our strategy of having a geographically diverse balance of Company-owned and

PPA wind resources. Production at this facility will often displace more expensive generation in our system or in the wholesale market.

We estimate that with this 200 MW addition, system costs will be approximately $97 million lower over time, on a present value of revenue requirements (PVRR) basis[2] than they would be if we abandoned the Project. Moreover, the Company's ownership of the Project offers these benefits to customers over a longer period than would be available under a PPA and at a higher capacity factor now that we have additional information about the specific turbines to be used for the Project. Finally, at the end of the 25-year assumed life, the Company will own the asset and can take advantage of any residual value that remains.

For these reasons, we believe acquiring the Courtenay Project is prudent, and the Commission should grant an ADP after notice and a hearing, if necessary, is held pursuant to Section 49-05-16. To achieve these benefits, it is necessary to place the Courtenay Project in service by December 31, 2016, when eligibility for the PTC is currently set to expire. In turn, this requires us to begin pouring foundations in 2015 to keep the Project on track. We, therefore, respectfully request that the Commission process this Application promptly and issue its decision by August 31, 2015.

In support of this Application, the Company provides the Direct Testimony of Company Witnesses Ms. Laura McCarten, Mr. Paul B. Johnson and Mr. Gregory L. Ford and Ms. Elizabeth M. Engelking from Geronimo, as follows:

- Ms. McCarten's Direct Testimony provides the Company's perspective on the value of acquiring this resource and presents the Company's policy justifications for this purchase;
- Mr. Johnson's testimony provides the resource planning and modeling analyses of the Courtenay Project;
- Mr. Ford's testimony describes the construction process and discusses the critical contracts that comprise the key obligations of the project; and
- Ms. Engleking's testimony provides Geronimo's perspective on the status of the Courtenay Project and why it decided to sell the Project to Xcel Energy.

The remainder of this Application will provide:

[2] Consistent with N.D.C.C. § 49-02-23, all economic modeling contained in this Application does not quantify environmental and other externality costs.

- Description of the Applicant;
- Communications and Service;
- Standard of Review;
- Courtenay Project Description;
- Cost Effectiveness of Project;
- Prudence of the Resource Acquisition;
- Reasonable Mitigation of Risks; and
- Conclusion

II. DESCRIPTION OF THE APPLICANT

Xcel Energy is a Minnesota corporation duly authorized to conduct business in the State of North Dakota as a foreign corporation. The Company conducts business in the State of North Dakota as a public utility subject to the jurisdiction and regulation of the Commission pursuant to Title 49 of the North Dakota Century Code. The name and address of Xcel Energy is:

Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

Xcel Energy also operates in North Dakota from the following address:

Northern States Power Company
2302 Great Northern Drive
Fargo, North Dakota 58102

The Company's Certificate of Incorporation with amendments and Certificate of Authority were filed with the Commission on September 30, 2009 and October 12, 2009, respectively, in Case No. PU-09-664. Current Certificates of Good Standing issued by the North Dakota and Minnesota Secretaries of State were filed in the same case on January 13, 2014, and are incorporated herein by reference.

Xcel Energy has service territory in five upper Midwest states including North Dakota. We presently serve approximately 90,000 retail electric customers in and around Fargo, Grand Forks, and Minot, North Dakota. We own just over 250 miles of transmission lines and 14 substations in North Dakota.

III. COMMUNICATIONS AND SERVICE

We respectfully request that the following persons be placed on the Commission's official service list for all official communications in this case:

David H. Sederquist
Senior Consultant, Regulation and Finance
Xcel Energy
2302 Great Northern Drive
Fargo, ND 58102
dave.sederquist@xcelenergy.com

SaGonna Thompson
Records Specialist
Xcel Energy
414 Nicollet Mall – 7th Floor
Minneapolis, MN 55401
regulatory.records@xcelenergy.com

IV. STANDARD OF REVIEW

Section 49-05-16 (1)(d) authorizes the Commission to issue an ADP if it "determines that the resource addition is prudent." Section 49-05-16 (7) further provides that "[t]here is a rebuttable presumption that a resource addition located in the state is prudent."

This standard is similar to the "honestly and prudently invested" standard that the Commission uses for ratemaking. *See* N.D.C.C. § 49-06-02. The general prudence standard calls for determining whether the utility action was reasonable at the time it was taken under all relevant circumstances. *See* Charles F. Philips, Jr., *The Regulation of Public Utilities – Theory and Practice* at 292 (Public Utility Reports 1988); *see also* David. J. Muchow, William A. Mogel, *Energy Law and Transactions* at § 4.02[3][b] (2009). Under Section 49-05-16 (1), the Commission may issue an order approving the prudence of a proposed project if four conditions are met:

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 in the amount of one hundred seventy-five thousand dollars;
c) The commission provides notice and holds a hearing, if appropriate, in accordance with 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.

V. COURTENAY PROJECT DESCRIPTION

This section provides information on the Courtenay Project including background on the Company's decision to purchase the Courtenay Project, a description of the Project, and an explanation of Project's structuring.

A. Background

The Courtenay Project was slated to be developed, constructed, owned, and operated by Geronimo, a wind-project developer with whom the Company has transacted on several occasions. Geronimo undertook activities toward the realization of that project, with an initial anticipated in-service date of December 31, 2014. Activities in support of the Project included obtaining state and local permits needed to construct the Project, purchasing long-lead-time equipment such as the substation transformers and the Project transformers, and substantially developing the real estate rights necessary to construct the Project undertaking continuous activity on the Project sufficient to satisfy the relevant PTC requirements, and entering into a number of contractual relationships designed to facilitate successful development of the Project.

After approval of the PPA and initial activities, the Courtenay Project encountered several delays which adversely impacted the Project's development schedule and caused the Courtenay Project to fail to meet critical milestones and default under the PPA. It appears there were two primary causes for this circumstance: (i) Geronimo priced the PPA assuming it would be able to fully utilize the North Dakota Income Tax Credit; and (ii) the Courtenay Project PPA price turned out to be insufficient to support the construction of the Project and precluded Geronimo from finding another equity partner who could fund the PPA structure on reasonable terms. Geronimo has fallen into default under the PPA.

Under the circumstances, the Company would be justified in terminating the PPA for default and removing this anticipated resource from our plans. However, prior to doing so, we determined it was appropriate to consider whether purchasing the Courtenay Project may be preferable for our customers to terminating the PPA.

The Company engaged in a detailed review of Project specifics to assess the risks and benefits of assuming Project development and ownership. In particular, we assessed work completed to date, contractual arrangements Geronimo had previously entered into, regulatory requirements, the Project's financial viability and turbine performance, and site suitability. We also conducted a detailed wind and site suitability study (Schedule 2 to the Direct Testimony of Paul B. Johnson) using the selected turbines and project layout, and identified the potential useful life of the Project for our customers' benefits if the Project is Company-owned. Finally, we undertook review and preliminary negotiations for entry into the TSA and BOP contracts to assess the continued viability of completing the Project.

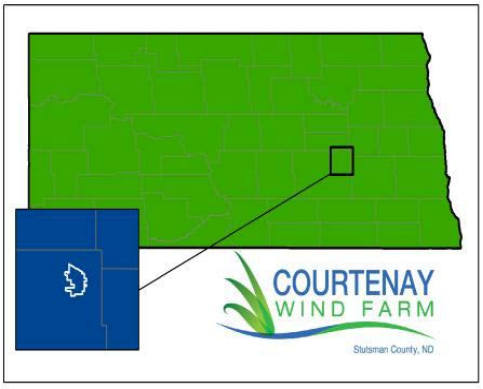
Based on these efforts, the Company reached several important conclusions:

- *The Courtenay Project is not viable on the terms negotiated in the PPA.* The loss of the North Dakota tax benefit had a material adverse impact on the viability of the PPA pricing for the Project. We note that Geronimo's PPA proposal was based on initial estimates that have subsequently been refined, bringing greater clarity to the cost and benefit picture.
- *Geronimo cannot continue to finance construction of the Project and has not identified an alternative partner to do so under the PPA structure.* Geronimo has focused its attention on selling the Project to Xcel Energy and has worked hard to address the Company's concerns about the structure and risks of the transaction. While Geronimo explored the possibility of selling the Courtenay Project (and PPA) to a number of other developers, those efforts have been unsuccessful.
- *Under the contractual terms we have obtained with the TSA and BOP vendors, it makes economic sense to own and operate the wind farm.* As the planned off-taker of the Courtenay Project output and with the ability to add the Project to rate base, the Company can manage the wind farm without the requirement for a minimum, levelized revenue stream over a limited period of operation and can maximize the long-term benefits of the Project.
- *Initiating construction of the Project this construction season facilitates meeting the 2016 PTC deadline at reasonable costs.* This timing requires us to step into the shoes of Geronimo as promptly as reasonably possible and with the Project on a schedule that maximizes the likelihood of success.

B. Project Description

The Courtenay Project is a 200 MW wind energy generation facility. It is located in

Stutsman County, along the edge of the Missouri Coteau in east-central North Dakota – northeast of Jamestown. The Project covers 24,900 acres. The Commission issued a Certificate of Site Compatibility for the Courtenay Project on November 13, 2013 in Case No. PU-13-64.



Source: Geronimo

Courtenay Project assets are the sole assets of Courtenay Wind Farm LLC. Under our transaction structure, the Company will purchase the membership interest of Courtenay Wind Farm LLC, which we expect will then be merged into the Company upon closing of the Purchase and Sale Agreement (PSA). This process will thereby transfer ownership of Courtenay Wind Farms LLC and all its assets, including real estate, regulatory approvals and permits, to Xcel Energy. The Company will reflect Project assets on its books as it would any other Company-owned generating facility construction work in progress. Xcel Energy will then oversee development and construction of the Project, and will operate the Courtenay Project upon completion.

Consistent with the Commission's Certificate of Site Compatibility,[3] the Courtenay Project will consist of 100 Vestas wind turbine generators and associated infrastructure. Associated infrastructure includes access roads, electrical collection system, meteorological monitoring stations, a project collector substation, a transmission line, and an operations and maintenance facility. The Company has entered into a TSA with Vestas to purchase the turbines (the single largest cost of a wind facility) and contracted with Wanzek Construction from Fargo for BOP construction services.

[3] This permit was issued by the Commission in Case. No. PU-13-64. On April 29, 2015, Xcel Energy filed a petition is seeking to have this permit transferred to the Company in Case No. PU-15-174)

An analysis of the site-specific wind data was conducted by the Company's consultant, AWS Truepower, utilizing the specific turbines planned for the Project. The analysis predicted a net capacity factor of 46.1 percent for the wind turbines, which was used in the Company's final levelized-cost analysis (*see* Schedule 2 to the Direct Testimony of Paul B. Johnson). Notably, the initial PPA with Geronimo was based on a generic net capacity factor assumption of **[TRADE SECRET BEGINS… …TRADE SECRET ENDS]** provided in Geronimo's RFP bid since turbines were not yet selected at the time of the bid. We have incorporated this updated information into our economic modeling, discussed in more detail below.

The Courtenay Project will interconnect at Otter Tail's Jamestown substation, which connects to 115 kV transmission lines owned by Otter Tail and to the Center-Maple River Line owned by Minnkota Power Cooperative (Minnkota) and Otter Tail. Xcel Energy is presently working through FERC proceedings to ensure the existing Generator Interconnection Agreement (GIA) for the Project remains viable, and to ensure access to Minnkota's jointly-owned transmission facilities.

To ensure the benefits of the PTC, the Courtenay Project must be placed in service no later than December 31, 2016. To achieve this date, work needs to begin in 2015. The Company notes that its construction of the Courtenay Project cannot start until the Commission issues a CPCN, approves the transfer of Certificate of Site Compatibility No. 36, and confirms that N.D.C.C. § 49-04-06 (Merger Statute) does not apply to this transaction.[4] To help facilitate timely construction of the Project to capture the PTC, the Company respectfully requests that the Commission grant an ADP on this project by August 31, 2015.

C. Description of the Transaction

The Courtenay Project is a distressed asset. However, the Company believes that the purchase and development of the Courtenay Project will provide benefits to our

[4] We note that Section 49-04-06 requires the Company to obtain the approval of the Commission before acquiring the business of a limited liability company that is incorporated for, organized for, or engaged in "the same or a similar business" as the Company. The Company's analysis of this statute indicates that Commission precedent argues that Courtenay Wind Farm LLC is not engaged in the same and similar business and that, therefore, Commission approval under Section 49-04-06 is not required for the Company to consummate the purchase of Courtenay Wind Farm LLC. On April 29, 2015 we submitted a request for a jurisdictional determination to confirm our understanding of Section 49-04-06 in Case No. PU-15-173. However, to the extent the transaction described above comes within the scope of Section 49-04-06, the Company has requested that the Commission grant its approval of the transaction along with its CPCN. The Commission's application of the public interest standard in the merger context looks to whether the transaction will be "injurious to the rights of the public or adversely affect other utilities." *Re Minot Telephone Company*, FINDING OF FACT, CONCLUSIONS OF LAW AND ORDER at Finding 13, Case No. PU-156-94-11 (March 23, 1994).

customers over the life of the Project as well as support the development of Company owned generating facilities in North Dakota. Because the proposed transaction will provide benefits to our customers and does not adversely affect other utilities, the public interest standard has been met.

The transaction is structured to allow the Company to step into the shoes of Geronimo and complete development of the Courtenay Project in its current state. To accomplish this, our work is structured around three key contracts.

- The first is the PSA for the purchase of the Project, including the real estate rights, permits, and contracts necessary for completion of the Project.
- The second is the TSA with Vestas for the purchase of the wind turbine generators for the Courtenay Project.
- The third is the BOP contract with Wanzek, a North Dakota based contractor, for the construction of the components of the Courtenay Project.[5]

The PSA has been structured as the purchase of 100 percent the membership interest of Courtenay Wind Farm LLC. After reviewing several potential transaction structures, we determined that this is the most expeditious transaction structure available. Courtenay Wind Farm LLC holds hundreds of leases, permits, and contracts that would be time consuming to transfer individually to the Company. By purchasing the corporate entity that holds these assets and merging the LLC into the Company, the assets transfer to the Company by operation of law. We believe this will allow the transfer of control of all of the Courtenay Project assets more efficiently than assigning these assets individually to the Company and seeking the myriad third-party consents required to do so. This is consistent with how the purchases of the Border Winds Project and Pleasant Valley Project with RES Americas were structured. The main difference is that instead of purchasing an operating wind farm, Xcel Energy will be purchasing the assets necessary to construct, own, and operate a wind farm.

The Company entered into the TSA and BOP contracts directly with our vendors. Because we are stepping into Geronimo's shoes to complete development of the Courtenay Project, we sought to utilize vendors for the wind turbines that were already approved by the Commission for the Courtenay Project when it issued the

[5] The three main contracts supporting our construction of the Project are several thousand pages long, including schedules. Consequently, for administrative convenience, the Company is not providing copies of these trade secret materials with this Application. The Company is happy to provide these documents upon request.

Certificate of Site Compatibility No. 36. Also, Geronimo had previously selected Wanzek as their BOP contractor. We believe there are many benefits in engaging a qualified North Dakota contractor for a project located in the State. Developing a relationship with a BOP contractor such as Wanzek can provide the Company with additional market options for future projects.

We estimate that the total capital expenditures for the Courtenay Project will be approximately $300 million (plus AFUDC), including Xcel Energy's anticipated development oversight and ownership transfer closing costs. Our PSA with Geronimo calls for payments of approximately **[TRADE SECRET BEGINS TRADE SECRET ENDS]** for purchase of the Courtenay Wind Farm, LLC and all of its assets. We further anticipate that our costs will include approximately **[TRADE SECRET BEGINS… …TRADE SECRET ENDS]** in turbine supply costs, and **[TRADE SECRET BEGINS… …TRADE SECRET ENDS]** in balance of plant contract costs.

Our development of the Project is contingent on several regulatory approvals. These include: (1) receipt of a Certificate of Public Convenience and Necessity from the Commission; (2) transfer of the Certificate of Site Compatibility from Courtenay Wind Farm LLC to the Company; (3) receipt of an ADP from the Commission; and (4) approval of the Minnesota Public Utilities Commission for our ownership of the Courtenay Project under Minnesota Statute Section 216B.1645, subd. 2a.

VI. COST EFFECTIVENESS OF PROJECT

To evaluate the cost effectiveness of the Courtenay Project, we used the Strategist resource planning model. Strategist simulates the operation of the NSP System and estimates the total cost of energy over the life of the Project on a present value basis. We use the model to test results under a range of input assumptions. To assess the Courtenay Project's impact on customer costs, we simulated the operation of the NSP System over the next 40 years with and without the addition of the 200 MW of wind generation from the Project as well as in comparison to purchasing the output of the Project through the PPA.

Wind generation has a zero marginal cost to produce the next unit of energy. In other words, after capital and ongoing operating and maintenance (O&M) costs are accounted for, it costs a wind generator nothing to produce the next MWh of energy. As the result, MISO generally provides for wind production ahead of other, higher marginally-priced, generation such as natural gas- and coal-based generation. Consequently, the more wind on the system and generating, the less traditionally-fired

generation is operated. When the energy from the 200 MW Courtenay Project is produced, it displaces a similar need for the Company to either produce the energy elsewhere on its system or purchase energy from the MISO market. The Strategist analysis accounts for these cost savings as well as the impact of the capital commitments associated with the Project.

1. Modeling the Courtenay Project

For Company-owned projects, the upfront purchase price must be translated into a projection of annual revenue requirement associated with financing, operations, depreciation, and taxes, including the addition of AFUDC. Projections of upfront and on-going capital investments and annual operating and maintenance expenses must also be developed.

To create a total annual cost of ownership estimate, we used a spreadsheet model with the detailed project-level assumptions and transferred that annual total cost estimate directly into Strategist. The spreadsheet model used cost of capital assumptions consistent with the Company's 2016-2030 Upper Midwest Resource Plan. In addition, the spreadsheet model assumed the Company's forecasted net operating loss (NOL), which is currently expected to dissipate in the 2019-2021 timeframe. Upfront capital investments are well defined. That said, we have also modeled two capital sensitivities that we call Capital Sensitivity 1 and Capital Sensitivity 2, which reflect capital expenditures of **[TRADE SECRET BEGINS…**
…TRADE SECRET ENDS] respectively, plus AFUDC. We note that our modeling efforts include the addition of AFUDC to these amounts.

The on-going capital investments and annual O&M expenses projections are subject to some uncertainty due to unforeseen equipment failures or changing costs within the industry. To test how variation from the base forecasts would impact the overall cost-effectiveness of the project, we conducted sensitivity tests in Strategist of plus and minus 25 percent of projected on-going capital investments and O&M expenses.

The economic benefit of an owned wind project is highly dependent on the annual generation from the site. Each additional MWh produced by a Company-owned project increases the value of the project because the higher the production, the lower the average costs will be, and therefore, the larger the benefits. To test how average capacity factors impact the economic value of the Courtenay Project, Strategist modeled this sensitivity using +/- 5 percent of the expected annual generation of 46.1 percent, based on our updated wind study. The base assumption for the life of the

Project was 25 years (as compared to 20 years under the PPA scenario), and sensitivities were performed for 20-year and 30-year lives.

For our modeling efforts, we utilized our most recent resource planning model, which is the same one used for our 2016-2030 Upper Midwest Resource Plan. Consequently, several underlying assumptions have changed for our analysis of Company ownership of the Courtenay Project in addition to capacity factor and resource life. We discuss these changes here and, below, provide an analysis of Company ownership of the Courtenay Project under the same assumptions we used when we analyzed the PPA so that our analysis is complete and transparent.

In accordance with the latest MISO effective load carrying capability (ELCC) analysis, we modeled the Courtenay Project having a 14.8 percent accredited capacity value. However, per MISO's tariff and business practices, for the Courtenay Project to receive accreditation as a capacity resource it must have firm delivery rights either with Network Resource Interconnection Service or firm transmission service (Network Integration Transmission Service or Firm Point-to-Point Transmission Service). Our expectation for the Courtenay Project is that these wind resources will not be given this designation until 2021 when various transmission system upgrades, including MISO's MVP projects, are complete. Our modeling efforts reflect the expected capacity accreditation in 2021.

The Strategist model does not explicitly model transmission congestion and line losses for new resources. To ensure that we are accounting for all the costs associated with our wind proposal, we included the congestion and line loss estimates from MISO's 2012 Promod models. The Promod model contains detailed information on the transmission topology in MISO, and has the ability to forecast hourly prices at individual nodes throughout the system. It is the same model that MISO used in their most recent round of transmission planning analysis, and contains all planned upgrades to the transmission system that may impact transmission congestion in the future. The difference in price between any two locations within MISO is interpreted at the combined impact of transmission system congestion and line losses.

Last, we have performed a new wind integration study as part of our most recent Resource Plan. Based on this new study, we utilized wind integration costs of $1.10/MWh, consistent with our recent Resource Plan filing.

2. Strategist Results

The results of our Strategist analysis shows that as compared to abandoning the Project, the Courtenay Project will result in net savings for our customers under all sensitivity tests conducted.

Table 1: PVRR Results ($millions)

PVRR, Current Assumptions ($M)	Base	Low Gas	High Gas	Markets On	30 Year Operating Life	20 Year Operating Life	+5% Energy Production	-5% Energy Production	Capital Sensitivity 1	Capital Sensitivity 2	+25% On-Going Ownership Costs	-25% On-Going Ownership Costs
Base Case (No Project)	$46,015	$43,248	$50,002	$45,519	$46,015	$46,015	$46,015	$46,015	$46,015	$46,015	$46,015	$46,015
Courtenay Own	$45,918	$43,198	$49,844	$45,447	$45,909	$45,995	$45,872	$45,949	$45,935	$45,952	$45,939	$45,897

Table 2: Incremental PVRR from Base Case ($millions)

PVRR Delta, Current Assumptions ($M)	Base	Low Gas	High Gas	Markets On	30 Year Operating Life	20 Year Operating Life	+5% Energy Production	-5% Energy Production	Capital Sensitivity 1	Capital Sensitivity 2	+25% On-Going Ownership Costs	-25% On-Going Ownership Costs
Courtenay Own	($97)	($50)	($159)	($72)	($106)	($20)	($143)	($66)	($80)	($63)	($76)	($117)

Because the Courtenay Project was originally developed as a PPA, we also modeled a comparison of Company Ownership against being an offtaker under the PPA under several sensitivities. Although the PPA option is no longer viable, we believe it may provide a relevant comparison to ownership given there have been several changes in the Project's circumstances. Company ownership compares favorably to the PPA under any sensitivity other than a 20-year life (which is somewhat offset by the residual value of owning the assets comprising the Courtenay Project).

First, we compared Company ownership versus the PPA utilizing the capacity factor assumed in the PPA. As previously noted, this capacity factor was provided in Geronimo's RFP bid and developed before specific turbines were selected and our updated wind study was completed. Second, we compared Company ownership to the PPA utilizing the updated capacity factor identified in our wind study. Utilizing the updated capacity factor and assuming a 25-year life (consistent with our typical assumptions for a Company-owned project), Company ownership compares favorably to the PPA under any circumstance other than a 20-year life sensitivity:

Table 3: Incremental PVRR from PPA ($ millions)

PVRR Delta, Current Assumptions ($M)	Base	Low Gas	High Gas	Markets On	30 Year Operating Life	20 Year Operating Life	+5% Energy Production	-5% Energy Production	Capital Sensitivity 1	Capital Sensitivity 2	+25% On-Going Ownership Costs	-25% On-Going Ownership Costs
Courtenay PPA	($62)	($29)	($103)	($42)	($62)	($62)	($82)	($57)	($62)	($62)	($62)	($62)
Courtenay Own	($97)	($50)	($159)	($72)	($106)	($20)	($143)	($66)	($80)	($63)	($76)	($117)
Own vs. PPA	($35)	($21)	($55)	($31)	($44)	$42	($60)	($9)	($18)	($1)	($14)	($55)

Importantly, even with the assumptions we utilized when analyzing the PPA, the Courtenay Project under Company ownership provides absolute savings under all sensitivities when compared to no Courtenay Project.

As indicated in the PVRR tables above, our analysis of the updated circumstances illustrates that the Courtenay Project provides cost savings to our customers even under the conservative sensitivity cases studied.

An alternate way of presenting the Strategist results is by calculating the levelized price of the project and the other costs and benefits associated with it. Levelized prices are a fixed $/MWh price that have the same NPV as the actual cost streams generated by Strategist. For the sake of comparison, the 20-year levelized cost of the Courtenay PPA was **[TRADE SECRET BEGINS… …TRADE SECRET ENDS].** As mentioned previously, in addition to the direct project costs, the Strategist model also adds cost for wind integration, transmission congestion, and line losses. The primary benefit of the project is displaced generation from fossil fuel resources, but the model also tracks benefits from avoided CO2 emissions and capacity credit. Table 4 below illustrates how the levelized costs of the agreements are more than offset by the value of avoided generation.

Table 4: Levelized Costs Analysis - $/MWh

	[Trade Secret Begins…
Revenue Requirements	
Wind Integration	
Congestion/Line Losses	
Avoided Fossil Fuel	
Capacity Credit	
	…Trade Secret Ends]
Net Cost (Benefit)	($10.60)

In addition to the economic benefits, adding additional wind at favorable pricing provides a hedge against future increases in natural gas prices, market energy costs, and CO2 regulation. This is primarily because the wind displaces thermal generation or market purchases that are subject to volatility in fuel, power, and emissions costs. To illustrate the benefit of the Courtenay Project, Table 5 below shows the base case volumes of natural gas, market purchases, and CO2 emissions – and the deltas against these factors for the Project.

Table 5: Hedge Value

Total System 2016-2042	**CO2** *Million tons*	**Natural Gas** *bcf*	**Market Purchases** *GWh*
Base Case (No Project)	565	2,129	103,811
Add Courtenay	(15)	(58)	(8,173)

We recognize, however, that the impacts to our customers will be different under the Company's ownership as opposed to through our purchase of the output of the Project under a PPA. This is mainly due to the different rate treatment for Company owned projects (through rate base or capital riders) and PPAs (through the Fuel Cost Recovery Rider (FCR)). Due to this, there will be a slight increase in expenses (and rates during the interim period while recovery is accomplished through the Renewable Energy Rider (RER)) in the first few years of Company ownership. That said, we expect that soon after initial operation, customers' overall bills will be lower than otherwise as a result of our proposed resource acquisition. Our Strategist dispatch simulation forecasts that the cost of the Project proposed in this Petition will be more than offset by decreases in the cost of fossil fuel and other purchased energy.

To develop our rate impact estimates, we used the output of our Strategist model divided by our forecasted sales volume. Table 6 below estimates how average rates will be affected by the proposed wind project.

Table 6: Annual Rate Impact Analysis

	2015	2016	2017	2018	2019	2020
Base Rates	0.00¢/kWh	0.02¢/kWh	0.09¢/kWh	0.06¢/kWh	0.06¢/kWh	0.04¢/kWh
Fuel Clause	0.00¢/kWh	0.00¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh
Avoided Fuel & Purchased Power	0.00¢/kWh	0.00¢/kWh	(0.05¢/kWh)	(0.05¢/kWh)	(0.06¢/kWh)	(0.05¢/kWh)
Net Rate Impact	**0.004¢/kWh**	**0.018¢/kWh**	**0.040¢/kWh**	**0.014¢/kWh**	**0.014¢/kWh**	**(0.008¢/kWh)**

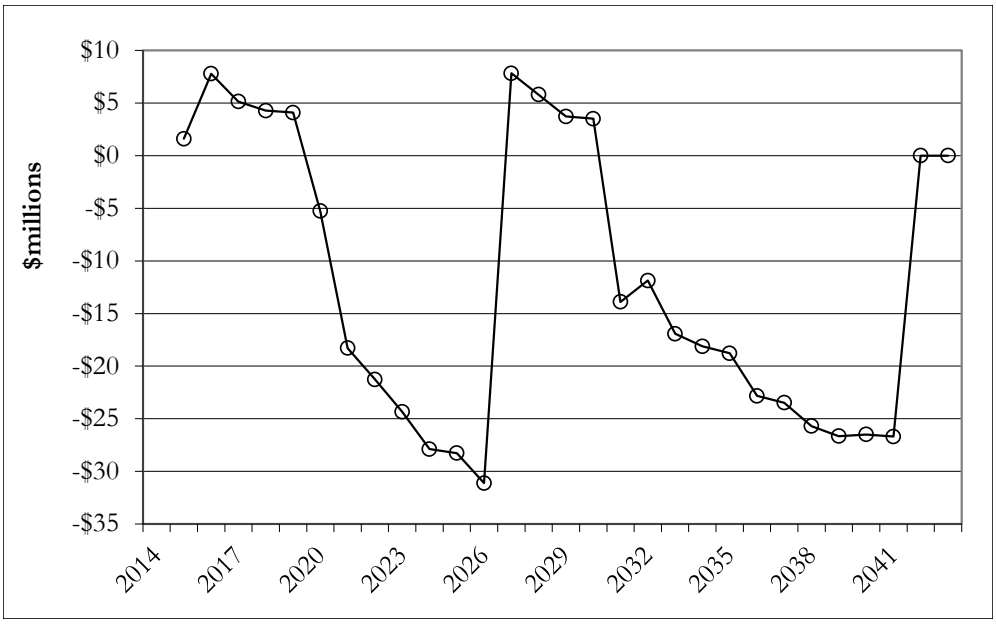
	2021	2022	2023	2024	2025	2026
Base Rates	0.01¢/kWh	0.01¢/kWh	0.00¢/kWh	0.00¢/kWh	0.00¢/kWh	-0.01¢/kWh
Fuel Clause	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh
Avoided Fuel & Purchased Power	(0.06¢/kWh)	(0.06¢/kWh)	(0.06¢/kWh)	(0.06¢/kWh)	(0.06¢/kWh)	(0.06¢/kWh)
Net Rate Impact	**(0.038¢/kWh)**	**(0.042¢/kWh)**	**(0.050¢/kWh)**	**(0.055¢/kWh)**	**(0.056¢/kWh)**	**(0.062¢/kWh)**

	2027	2028	2029	2030	2031	2032
Base Rates	0.08¢/kWh	0.08¢/kWh	0.08¢/kWh	0.08¢/kWh	0.08¢/kWh	0.07¢/kWh
Fuel Clause	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh
Avoided Fuel & Purchased Power	(0.06¢/kWh)	(0.07¢/kWh)	(0.07¢/kWh)	(0.07¢/kWh)	(0.11¢/kWh)	(0.10¢/kWh)
Net Rate Impact	**0.028¢/kWh**	**0.023¢/kWh**	**0.018¢/kWh**	**0.018¢/kWh**	**(0.022¢/kWh)**	**(0.016¢/kWh)**

	2033	2034	2035	2036	2037	2038
Base Rates	0.07¢/kWh	0.07¢/kWh	0.07¢/kWh	0.07¢/kWh	0.07¢/kWh	0.06¢/kWh
Fuel Clause	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh
Avoided Fuel & Purchased Power	(0.11¢/kWh)	(0.11¢/kWh)	(0.11¢/kWh)	(0.12¢/kWh)	(0.11¢/kWh)	(0.12¢/kWh)
Net Rate Impact	**(0.027¢/kWh)**	**(0.029¢/kWh)**	**(0.030¢/kWh)**	**(0.039¢/kWh)**	**(0.040¢/kWh)**	**(0.044¢/kWh)**

We estimate that there will be an initial base rate impact for Company ownership of the Courtenay Project in 2017, which will then rapidly decline through 2026 as the project is depreciated. The cost impacts of this Project will be also further offset by avoided fuel and purchased energy expenses. Upon expiration of the 10-year PTC, a similar pattern occurs beginning in 2027. This is shown graphically in Figure 1below.

Figure 1: Annual Cost (Savings) of Company Ownership



VII. PRUDENCE OF THE RESOURCE ACQUISITION

The Company's acquisition of the Courtenay Project is prudent. We have evaluated the Courtenay Project from a long-term perspective and from a near-term rate impact perspective. And we have evaluated the risks associated with the development of the Courtenay Project. Based on all of this analysis, we believe that it is reasonable and in our customer's interests for the Commission to grant the ADP for this Courtenay Project. We note that pursuant to Section 49-05-16 (7), the Courtenay Project is presumed to be prudent.

Our analysis shows that the addition of the Courtenay Project will keep our customers' bills lower than they otherwise would be over the life of the Courtenay Project. Using what we believe are conservative assumptions, our Strategist modeling predicts energy costs for our customers will be $97 million lower over the life of the Courtenay Project.

Our analysis leads us to conclude that the addition of Courtenay Project to our system is prudent because it will contribute to substantial financial benefits to our customers. These financial benefits are reflected in a lower cost of energy in the near- and long-term, and in a material hedge against future increases in the fuel and government regulation components included in the cost of energy. Thus, the Company is cost-

effectively acquiring a resource necessary to meet the regulatory requirements of all the jurisdictions in which we provide service and saving a North Dakota based project to increase the geographic diversity of its generating portfolio.

VIII. REASONABLE MITIGATION OF RISKS

As with any large generating project, there are risks associated with the development of the Courtenay Project. Before deciding to move forward with the purchase, construction, and ownership of the Project, the Company performed a due diligence investigation to identify risks of moving forward and to determine if these risks could be reasonably mitigated. Our due diligence investigation concluded that the real estate, permits, and contracts necessary to develop the Project were in a reasonably-acceptable state. However, our due diligence investigation also identified risks inherent with moving forward. We discuss each of the primary areas of risk and our mitigating actions in this section.

A. Development Risk

1. Federal PTC Risk

The December 2014 renewal of the federal PTC provides a tax credit for those projects that began construction activities by December 31, 2014. IRS guidelines consider commencement of construction to have occurred when physical work of a significant nature has started or five percent of the total cost of the facility has been incurred and the developer makes continuous efforts to complete the facility thereafter.[6]

The Company believes the Courtenay Project will meet the requirements necessary to qualify for the PTC, and that the risk has been reasonably mitigated. Under the PSA, Geronimo is required to provide certification that the Project was under construction as defined by the IRS through the end of Geronimo's ownership of the Project.

The Project must then be placed into service by December 31, 2016 to retain reasonable certainty that it will continue to qualify for the PTC. Because the

[6] *See* IRS Notice Nos. 2013-29, 2013-60, 2014-46, 2015-25. Under IRS Notice 2015-25, placing a wind facility in service before January 1, 2017 provides certainty that a wind facility can qualify for the PTC if it has met certain threshold requirements that the Courtenay Project has met. Consequently, the Company is seeking to obtain the certainty provided by IRS Notice 2015-25 by placing the Project into service prior to January 1, 2017. That said, the Project could potentially also qualify for the PTC if it misses this in-service date under other provisions of the IRS Code and guidance. However, obtaining the certainty of a 2016 in-service date will mitigate any risks for obtaining the PTC for the benefit of our customers.

Company is taking over the development and construction of this Project, it is incumbent upon us to ensure that its completion will occur consistent with the requirements for the PTC. We believe our TSA and BOP contracts provide reasonable terms and conditions to help ensure our third-party vendors take the actions needed to meet the PTC deadline.

The other risk related to capturing the PTC relates to obtaining the necessary approvals to commence construction of the Project. In addition to the approval requested in this Application, the Company requires a CPCN and the Commission's approval of the transfer of Certificate of Site Compatibility No. 36 for the Courtenay Project before beginning physical construction. And the Commission needs to decide whether the Merger Statute (N.D.C.C. § 49-04-06) applies. These approvals have been requested in Case No.'s PU-15-173, PU-15-174 and PU-15-175. Failure to timely obtain these approvals could impede our ability to place the Project in-service with sufficient time to capture the PTC. Therefore, we respectfully request that the Commission issue an order on this Application by August 31, 2015.

2. Transmission and Interconnection Risks

When we entered into the PPA for the output of the Courtenay Project, its interconnection to the MISO Transmission System had not been extensively studied and the PPA projections were based on good faith estimates and assumptions. At this time, the interconnection study work is completed and a GIA has been executed for the Project. The GIA identifies the costs of Network Upgrades needed to support the Project as well as the rights and obligations of Courtenay Wind Farm LLC with respect to maintaining its interconnection. As a result, the normal risk of interconnection costs we generally seek to mitigate do not exist in this instance due to the late stage of the Courtenay Project's development. We have incorporated these costs into our economic model analyzing the Project.

However, we have identified two key transmission and interconnection risks related to the Project. We have taken steps to mitigate these risks and will not proceed to construction absent resolution of these issues.

First, MISO filed a Notice with FERC of Termination of the GIA with FERC, which is a necessary prerequisite to terminating the interconnection agreement. MISO is seeking to terminate the GIA due to Courtenay Wind Farm LLC's failure to satisfy

material milestones under the GIA.[7] Maintaining the GIA for the Courtenay Project is a key component to successful development of the Project. Should the GIA be terminated, the Company will no longer be able to develop the Project in time to capture the PTC. Therefore, we have made the preservation of the GIA a condition precedent to closing the contract with Geronimo for our purchase of the membership interests of Courtenay Wind Farm LLC.

To resolve this issue, Xcel Energy has requested intervention in the FERC proceeding and proposed terms to cure the default.[8] We are pleased to report that MISO accepted the cure and on May 4, 2015, filed a motion with FERC seeking to withdraw its request for termination. Assuming FERC grants MISO's request to withdraw, it should resolve the issue. We expect the FERC proceeding to be resolved by approximately May 24, 2015.

Second, we have identified a transmission risk with respect to the need to deliver power from the Project over transmission lines owned by Minnkota. The Courtenay Project will interconnect at the Jamestown Substation, which is owned by Otter Tail and connects to 115 kV transmission lines owned by Otter Tail and to the Center-Maple River Line owned by Minnkota and Otter Tail. Minnkota informed Geronimo that Minnkota's consent is required before MISO can transmit Courtenay Project wind over the Center-Maple River Line, and that Minnkota must be compensated under its non-jurisdictional Open Access Transmission Tariff (OATT) rather than the MISO Open Access Transmission, Energy, and Operating Reserve Markets Tariff (MISO Tariff).

Geronimo has challenged Minnkota's claims for compensation and has sought declaratory judgment from the FERC regarding Minnkota's claims. The proceeding has been set for settlement procedures by FERC and the Company has been an active participant in those proceeding. Our discussions with the parties to that proceeding continue and we are cautiously optimistic that we can reach a reasonable outcome with Minnkota on this issue. We will keep the Commission informed as these proceedings continue.

We recognize that the deliverability of the Courtenay Project is a key prerequisite to our successful ownership and operation of it. Therefore, resolution of the dispute

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[7] *Midcontinent Independent System Operator, Inc.*, Docket No. ER15-1363-000, Notice of Termination of Generator Interconnection Agreement (March 25, 2015).

[8] *Midcontinent Independent System Operator, Inc.*, Motion to Intervene and Protest of Xcel Energy Services Inc. on Behalf of Northern States Power Company, a Minnesota Corporation, Docket No. ER15-1363-000 (April 14, 2015).

with Minnkota on terms satisfactory to the Company is a conditions precedent to our purchase of the membership interest in Courtenay Wind Farm LLC.

B. Construction and Capital Risks

The Company will carry some construction and out-year capital contribution risks for the Courtenay Project since we will own it. However, we have taken several steps to mitigate risks related to construction through contractual provisions with Geronimo and our vendors.

1. Risks Related to Purchase of Courtenay Wind Farm LLC

As noted above, we anticipate total payments to Geronimo of **[TRADE SECRET BEGINS… …TRADE SECRET ENDS]** to purchase the Project. This amount is a negotiated amount, which we believe is reasonable based on our due diligence.

Due to the unique and changed circumstances of this Project, we have likewise negotiated specific contractual terms with Geronimo to mitigate the risks of assuming development of this Project at this stage.

Given the distressed nature of the Project and Geronimo's investment to date, we concluded that it was important to move forward with the transaction early to ensure that the Company could bring its resources to bear as soon as possible to guide the final development details and complete construction of the Project in a timely manner. By taking ownership of Courtenay Wind Farm LLC, early, we are able to influence the development in a way that we could not accomplish by waiting.

However, we have also instituted several key conditions precedent to closing the contract, meaning that each provision must be satisfied before the closing can occur. These conditions and the efforts being taken to resolve them are discussed below.

- *Applicability of Section 49-04-06*. We must receive a determination from the North Dakota PSC that Section 49-04-06 is not applicable to the Project.

- *Viability of GIA*. Xcel Energy must be assured that the GIA remains viable through a reasonable resolution of the pending FERC docket.

- Minnkota *Interconnection Tariff*. The issue with respect to Minnkota tariff provisions, described above, must be resolved to the Company's satisfaction.

- *Mitigation of Due Diligence Issues*. Xcel Energy must have adequate opportunity to complete all due diligence, including review of real estate matters, site permits, financial considerations, and the like. Geronimo must use commercially reasonable efforts to cure any issues we have identified during our investigation, including real estate and permitting issues.

Absent satisfaction of such conditions, the PSA with Geronimo will not close and the assets will not transfer to Xcel Energy. The Project entity will continue to be owned by Geronimo and the Company will continue to have the PPA in place, with all defaults preserved.

Conversely, closing the PSA will occur upon completion of these conditions precedent. We note that the above conditions precedent to closing the PSA are related to the continued viability of the Project and legal requirements to consummate the transaction, but are not related to regulatory approvals for the Company's ownership and operation of the Project. We recognize that this is unusual. However, given the need to move quickly and mitigate risk, we believe it is in the Company's interest to assume control of the Courtenay Project as early as is prudent to facilitate project success.

In addition, the PSA provides that **[TRADE SECRET BEGINS…**

…TRADE SECRET ENDS]. Accordingly, we have structured the PSA to address the need for regulatory approvals and have added multiple incentives for Geronimo to ensure the Project is in service in a timely manner. We believe we have reasonably mitigated the risks associated with Geronimo's financial position, regulatory approvals outside the Commission's arena, and transmission and interconnection issues.

2. Turbine Supply Agreement

On April 29, 2015, we entered into the TSA with Vestas for the Courtenay Project. We note that time constraints in selecting vendors and initiating construction require Xcel Energy to effectively step into Geronimo's shoes and assess the viability of contracting with Geronimo's selected suppliers. Furthermore, the Certificate of Site Compatibility limits the acceptable vendors, and the GIA for the Courtenay Project is specific as to Vestas turbines. For these reasons, the Courtenay Project is unlikely to be viable with a different turbine supplier.

Fortunately, we found Vestas to be a positive business partner. We have had positive dealings with them in the past and they have expressed an interest in a longer-term relationship with Xcel Energy, and willingly negotiated favorable pricing and other terms with that goal in mind. Notably, Vestas offered to **[TRADE SECRET BEGINS...**

...TRADE SECRET ENDS]. In addition, our updated wind study focused on the Vestas turbine identifies an improved capacity factor of 46.1 percent, as compared to **[TRADE SECRET BEGINS... ...TRADE SECRET ENDS]** associated with Geronimo's PPA bid. The supplier also has a strong reputation in the industry for production of reliable turbines.

Further, **[TRADE SECRET BEGINS…**

…TRADE SECRET ENDS]. Such terms further serve to mitigate risk associated with turbine supply and overall construction.

While the costs of the actual TSA will likely be somewhat higher than Geronimo assumed when it developed its PPA pricing, the overall cost impact results in the energy resource remaining cost effective, particularly in light of the higher net capacity factor we expect to obtain.

3. Wanzek BOP Contract

Wanzek is the construction company Geronimo selected for the Courtenay Project. Wanzek is one of the few BOP vendors in the Midwest for a project of this nature, and operates out of Fargo, North Dakota. Working with Wanzek on this project

enables us to further diversify our supplier relationships and creates several hundred construction jobs for this North Dakota-based company.

As with the TSA, we have negotiated contract terms that mitigate Company risk while complying with industry standards for contracts of this kind. The BOP contract is stated on a lump sum basis based on an agreed schedule, with underlying costs fundamentally fixed absent the need to accelerate construction to achieve PTC deadlines or other needs. We have further negotiated standard provisions to mitigate general construction risk. That said, risk of completion in time to capture the PTC ultimately rests with the Company as the developer of the Project. While the costs of the Wanzek contract will likely be somewhat higher than Geronimo assumed when it developed its PPA pricing, the overall cost impact results in the Project remaining cost effective as discussed further below.

4. Environmental Risk

To the best of our knowledge, all necessary avian, bat, and protected species surveys have been completed for the Courtenay Project. We will work with the U.S. Fish and Wildlife Service (Service) to finalize an Eagle Conservation Plan (ECP) as well as a Bird and Bat Conservation Plan (BBCP) for the Project. The Company will also pursue application of a programmatic Eagle Take Permit under the Bald and Golden Eagle Protection Act, working closely with the Service on the permitting process. This permitting process will continue concurrent with construction activities for the Courtenay Project. During construction of the Courtenay Project, before a programmatic Eagle Take Permit is obtained, and pursuant to the ECP and BBCP, the Company will follow Service-approved construction best management practices to minimize and avoid potential impacts to eagles.

C. Operational Risks

Once in-service, wind projects face operational risks. These risks involve the amount of annual power generation and the real-time delivery of that power to our customers.

The operational risks associated with an owned-project remain with the Company. However these risks are offset by higher estimated benefits from Company ownership. To the extent that annual generation at Courtenay Project is lower than expected, we would be losing energy at no significant change in cost, and the overall cost-effectiveness of the Project would decrease. Conversely, if annual generation is greater than expected, our customers' benefits from the Project would increase.

Owned projects also have some uncertainty in annual costs for operation and maintenance.

In each of these areas, we have included what we believe to be conservative estimates of the expected on-going costs at Courtenay in our evaluation of the Courtenay Project. Capacity factor assumptions are at the 50 percent probability levels from the most recent wind study for the Project. We quantify both of these potential operating risks above in the Cost Effectiveness section of this Petition.

IX. CONCLUSION

We believe that our acquisition of the Courtenay Project will contribute to the substantial benefits to our customers – saving customers approximately $97 million in energy costs over time – and that we have reasonably mitigated the inherent risks associated with any new resource development.

Therefore, we respectfully request the Commission make an advance determination of the prudence for the acquisition of the Courtenay Project as an appropriate resource of the Company's integrated system.

Dated: May 6, 2015

Northern States Power Company

Respectfully submitted by:

/s/

DAVID SEDERQUIST
SR. REGULATORY/FINANCIAL CONSULTANT

Direct Testimony and Schedules
Laura McCarten

Before the North Dakota Public Service Commission
State of North Dakota

IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR AN ADVANCE DETERMINATION OF PRUDENCE FOR THE 200 MW COURTENAY WIND FARM PROJECT

Case No. PU-15_____
Exhibit ___(LM-1)

Policy Testimony

May 6, 2015

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Schedules

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND TITLE.

A. My name is Laura McCarten. I am Regional Vice President for Northern States Power Company.

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I am responsible for regulatory, legislative, and customer and community relations in North Dakota and South Dakota, and legislative and community relations Minnesota. I provide strategic leadership regarding the development and implementation of our initiatives to cost effectively meet the energy needs of our retail customers and communities we serve. My resume is included as Exhibit___(LM-1), Schedule 1.

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

A. I provide support for our request for an Advance Determination of Prudence (ADP) for the Company's proposed acquisition of the 200 MW Courtenay Wind Farm Project (Courtenay Project). In my testimony, I discuss the following topics:

- Our proposed resource acquisition;
- The prudence of our proposal;
- The regulatory approvals needed for our proposal; and
- Introduce the other witnesses testifying on behalf of the Company.

Q. PLEASE SUMMARIZE THE COMPANY'S PROPOSED RESOURCE ACQUISITION.

A. We are proposing to construct and own the 200 MW Courtney Project, located on the edge of the Missouri Coteau in east-central North Dakota – northeast of Jamestown, North Dakota. The Courtenay Project was slated to be developed, constructed, owned, and operated by an affiliate of Geronimo Wind Energy (Geronimo), a wind-project developer with whom the Company has transacted on several occasions. The Company identified the Courtenay Project for acquisition through its February 2013 Request for Proposals (RFP) for additional wind resources. On July 26, 2013, the Company requested an advance determination of prudence (ADP) for purchasing the output of the Courtenay Project through a power purchase agreement (PPA) in Case No. PU-13-706. On February 24, 2014, the Commission granted the requested ADP.

Q. WHY IS THE COMPANY NOW PROPOSING TO DEVELOP, CONSTRUCT, OWN, OPERATE, AND MAINTAIN THE COURTENAY PROJECT?

A. After the approval of the PPA and initial development activities, Geronimo determined that it lacked the financial wherewithal to complete the Project at the costs assumed in the PPA. This is largely the result of Geronimo's inability to obtain third-party equity or financing because the PPA pricing turned out to be insufficient to attract investors. As a result, Geronimo has fallen behind schedule and is in default under the terms of the PPA. Recently, Geronimo advised Xcel Energy that they had unsuccessfully tried to sell the project to other parties and asked the Company to purchase it and complete construction, and thereby avoid the project potentially failing.

Q. WHAT DUE DILIGENCE WAS CONDUCTED BY THE COMPANY TO DETERMINE THE FINANCIAL VIABILITY OF THE PROJECT?

A. The Company engaged in a detailed investigation to assess the benefits and risks of Company ownership and development of the Courtenay Project. In particular, we examined the work completed to date, analyzed existing contractual provisions, outlined necessary regulatory approvals, conducted a detailed wind study, and overall assessed the Project's financial viability. Based on these efforts, the Company determined that even with the additional costs in the Company's development and ownership, that the Courtenay Project remained a cost-effective North Dakota generation resource. Moreover, the Company's ownership of the Project allows our customers to reap these benefits over a longer period of time than a PPA, thereby providing additional cost savings to customers. Company Witness Mr. Greg Ford provides additional information with respect to our due diligence efforts.

II. OVERVIEW OF COURTENAY PROJECT

Q. PLEASE DESCRIBE THE COURTENAY PROJECT.

A. The Courtenay Project is a 200 MW wind energy generation facility that will be located northeast of Jamestown along the edge of Missouri Coteau in east-central North Dakota. The Project covers 24,900 acres of land in northeastern Stutsman County and will consist of 100-2 MW Vestas wind turbine generators and associated infrastructure. The Project will have an estimated output of 807,813 megawatt hours (MWh) per year, assuming net capacity factors of between 43 and 47 percent. The Courtenay Project will interconnect to the

Otter Tail Power Company 345/115 kV substation located north of Jamestown. The Commission issued a Certificate of Site Compatibility for the Courtenay Project in Case No. PU-13-64.

Q. HOW WILL THE COMPANY DEVELOP THE COURTENAY PROJECT?

A. We intend to acquire the Project from a Geronimo subsidiary which holds all of the permits, real estate rights, and contracts necessary to develop the Courtenay Project. The structure of the transaction is that we will purchase the Geronimo entity and absorb the assets into the Company. We will then complete development and construct the project directly. The Company will also step into Geronimo's shoes for two other critical contracts, one with the wind turbine supplier and the other with the construction company, North Dakota-based Wanzek Construction. Company Witness Mr. Greg Ford provides additional information with respect to our development of the Courtenay Project.

Q. WHAT IS THE ESTIMATED IN-SERVICE DATE FOR THE PROJECT?

A. The Company must complete construction of the Project and place it into service by December 31, 2016 to take advantage of the federal Production Tax Credit (PTC). Our construction schedule is based on achieving this in-service date. Company Witness Mr. Greg Ford provides additional information with respect to our ability to capture PTCs.

Q. WHAT ARE THE ESTIMATED COSTS FOR THE PROJECT?

A. The construction of the Project is estimated to cost approximately $300 million. Company Witnesses Mr. Paul Johnson and Mr. Greg Ford provide additional

information with respect to the cost of the project.

Q. WHAT ARE THE BENEFITS OF ADDING THIS RESOURCE TO THE COMPANY'S INTEGRATED SYSTEM?

A. Our analysis indicates that, under Company ownership, the Courtenay Project is a cost-effective generation resource that will provide savings to our customers over its service life. In addition, preserving this North Dakota-based generation source is consistent with our commitment to develop generation in this State to diversify the geographic location of our generation resources.

Q. ARE THERE OTHER NORTH DAKOTA BENEFITS TO CONSTRUCTING THE COURTENAY PROJECT?

A. Yes, there are other benefits that will flow to North Dakota as a result of keeping this Project alive. In addition to the lease payments to landowners and tax base provided by this Project, the Company is also utilizing North Dakota based contractor, Wanzek Construction, and labor to build the Project. We estimate that construction of the Project will take place between late summer 2015 and December 2016 and that we will employ 250 to 300 workers at peak construction times. We expect that 40 percent of these workers will be North Dakota residents.

We also anticipate that an additional approximately ten workers will be required for the ongoing operation and maintenance of the Courtenay Project. This is in addition to the approximately seven additional workers we will need for ongoing operation and maintenance at the Border Winds Project, the Company's other

North Dakota wind farm, for which the Commission granted an ADP in Case No. PU-13-742. The Company anticipates that it will coordinate operation and maintenance among its regional wind farms to the extent reasonable under the circumstances.

III. PRUDENCE OF THE RESOURCE ADDITION

Q. IS THE COURTENAY PROJECT A PRUDENT RESOURCE ADDITION?

A. Yes. The Project will provide economic benefits to our customers by adding a new North Dakota-based, cost-effective generation resource to our portfolio. In addition, the Company has structured the contractual agreements for the Project to appropriately balance benefits and risks associated with a Company-owned facility. I note that under North Dakota law, by being located in North Dakota, the Courtenay Project enjoys a rebuttable presumption of being prudent.

Q. HOW DID THE COMPANY ANALYZE THE COST-EFFECTIVENESS OF THIS PROJECT?

A. To assess the cost-effectiveness of the Courtenay Project, we used the Strategist resource planning model. The Strategist Planning model simulates the operation of the NSP System and estimates the total cost of energy over the life of the Courtenay Project on a present value basis.

Wind generation has a zero marginal cost to produce the next unit of energy because there are no fuel costs. Thus, after capital costs and O&M are accounted for, there are no additional costs to produce the next MWh of energy. As a result, wind generation like the Courtenay Project, often displaces more

expensive energy from traditionally-fired power plants elsewhere. The Strategist model accounts for these cost savings and offsets them against the capital investments associated with the Project.

Company Witness Mr. Paul Johnson provides additional information with respect to the economic analysis of the Courtenay Project.

Q. WHAT WERE THE RESULTS OF THE STRATEGIST MODELING?

A. The results of the Strategist analysis show that as compared to abandoning the Project, the Courtenay Project will result in net savings for our customers under all future scenarios studied. We conservatively estimate that system costs will, over time, be approximately $97 million lower than they would be without the Courtenay Project on a present value of revenue requirements (PVRR) basis, without adjustment for environmental considerations. Moreover, the Company's ownership of the Project will allow these benefits to extend for a longer period of time than would have been available under a PPA.

Company witness Mr. Paul B. Johnson discusses the Company's Strategist analysis of the Project in more detail in his Direct Testimony.

Q. ARE THERE RISKS ASSOCIATED WITH THIS PROJECT?

A. The development of any wind project comes with certain risks. These risks include failure to qualify for Production Tax Credit (PTC), construction and capital-cost risk, transmission interconnection and deliverability risks, and operational risks. These risks are discussed in greater detail in the Application

and in the Direct Testimony of Company witness Mr. Greg Ford.

Q. HOW HAS THE COMPANY MITIGATED THE PROJECT'S RISKS?

A. We have attempted to mitigate these risks through specific contractual terms and conditions. For instance, the interconnection and transmission risks for the Project include: (1) that MISO has filed a Notice of Termination of the Generator Interconnection Agreement (GIA) for the Project for failure to satisfy necessary milestones and (2) Minnkota Power Cooperative, which owns transmission facilities needed to transmit power produced by Courtenay Project, is seeking to require compensation under both its non FERC-jurisdictional Open Access Transmission Tariff and the MISO Tariff. The Company has mitigated these interconnection and transmission risks by requiring resolution of these issues to the Company's satisfaction as a condition precedent to our agreement with Geronimo. Mr. Ford will provide greater detail on these risks and our mitigation measured included in the Project contracts in his Direct Testimony.

IV. REGULATORY APPROVALS

Q. IS THE TRANSACTION CONTINGENT ON ANY APPROVALS FROM THIS COMMISSION?

A. Yes, the Company's obligation to pay Geronimo for the assets is contingent on several regulatory approvals from the Commission due to the structure of the transaction. These include: (1) approval of this ADP; (2) a CPCN and transfer of Certificate of Site Compatibility; and (3) a jurisdictional determination from

the Commission that North Dakota Ch. 49-04-06 does not apply.[1]

I note that the Company will take control of the project and its assets prior to receiving all regulatory approvals. The reason for this is to ensure that the Company has control of the assets early to maximize the likelihood of preserving the viability of the project. However, we negotiated terms that provide that we are not obligated to pay for those assets until after we receive regulatory approvals and if the necessary regulatory approvals are not forthcoming, the transaction can be reversed under these circumstances.

Q. IS THE COMPANY REQUESTING COMMISSION ACTION BY A CERTAIN DATE?

A. Yes. Our ability to secure this resource at a favorable rate stems in part from the federal government's December 2014 extension of the renewable energy PTC. Under current circumstances, we are confident the project will qualify for the PTC if we complete construction by the end of 2016. To ensure completion in that timeframe, we plan to commence active construction in the Fall of 2015 and we hope to pour some of the concrete foundations for the wind turbines prior to winter. Therefore, we respectfully request that the Commission issue an order granting the requested approvals by August 31, 2015, if at all possible, to ensure that we have sufficient time to construct and place the Project in-service to qualify for the PTC.

[1] The Company is also seeking approval from the Minnesota Public Utilities Commission for our ownership of the Project under Minn. Stat. § 216B.1645, subd. 2a.

V. PRESENTATION OF WITNESSES

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

A. In addition to my Policy Testimony, the Company sponsors the following two witnesses:

- *Paul B. Johnson* – who will provide information about the resource planning analysis that was conducted by the Company to evaluate the cost-effectiveness of this resource; and
- *Greg Ford* – who provides more detailed information with respect to the contracts necessary to acquire and develop the Courtenay Project.
- *Elizabeth Engelking* – from Geronimo who provides additional context into the reasons why Geronimo decided to sell the project.

VI. CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. The Courtenay Project is a cost-effective North Dakota based generation resource that enjoys a rebuttable presumption of prudence under North Dakota law. As demonstrated in the ADP application and accompanying testimony, this resource addition is prudent because it is cost-effective and the risks associated with the Company's ownership and development, have been appropriately mitigated.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

Laura McCarten

Experience

2008-Present — Xcel Energy — Minneapolis, MN

Regional Vice President, NSPM

- For Xcel Energy's North Dakota service territory, responsible for regulatory and legislative interface and strategies, customer and community relations and public affairs, gas business development, and provide strategic leadership on initiatives to effectively serve customers.
- For Xcel Energy's Minnesota service territory, responsible for managing relationships with communities and large customer accounts, gas business development and our HomeSmart service.
- For Xcel Energy's South Dakota service territory, responsible for regulatory and legislative interface and strategies, customer and community relations and public affairs, and provide strategic leadership on initiatives to effectively serve customers.

2006-2008 — Xcel Energy — Minneapolis, MN

Director, Regional Transmission Development

1997-2005 — Xcel Energy — Minneapolis, MN

Director, Minnesota Community Services

1994-1997 — Xcel Energy — Mankato, MN

Regional General Manager

1992-1994 — Northern States Power — Minneapolis, MN

Manager, Regulatory Affairs

1979-1991 — Northern States Power — Minneapolis, MN

Nuclear Generation: Spent Nuclear Fuel Project Manager, Engineer

Education

1979 — University of Wisconsin — Madison, WI

Bachelor of Science in Nuclear Engineering

Professional Development

- Xcel Energy Leadership Advantage Program (2004)
- University of Michigan Business School, Strategic Marketing Planning (1998)
- University of Minnesota, Carlson School of Management, Minnesota Management Institute (1996)

Community Service

- Lignite Energy Council, Board of Directors
- Minneapolis Regional Chamber of Commerce, Board of Directors
- North Central Electrical League, Board of Directors
- Ordway Center for the Performing Arts, Board of Directors
- University Enterprise Laboratories, Board of Directors

STATE OF NORTH DAKOTA
BEFORE THE
PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR AN ADVANCE DETERMINATION OF PRUDENCE FOR THE 200 MW COURTENAY WIND FARM PROJECT

Case No. PU-15-_____

STATE OF MINNESOTA)
) ss
COUNTY OF HENNEPIN)

Laura McCarten, being first duly sworn on oath, deposes and says that she is the Regional Vice President for Applicant Northern States Power Company, in the above captioned matter, that she has read the testimony and schedules submitted in the above captioned matter under her name, that they were prepared under her direction, that she knows the contents thereof, and that the same is true and correct to the best of her knowledge and belief.

Laura McCarten

Laura McCarten

Subscribed and sworn to before me
this 5 th day of May, 2015.

Notary Public
My Commission Expires: 1-31-2020

CYNTHIA D. HARRINGTON
Notary Public, State of Minnesota
My Commission Expires
January 31, 2020

PUBLIC DOCUMENT: TRADE SECRET INFORMATION EXCISED

– PUBLIC DATA –

Direct Testimony and Schedules
Paul B. Johnson

Before the North Dakota Public Service Commission
State of North Dakota

IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR AN ADVANCE DETERMINATION OF PRUDENCE FOR THE 200 MW FOR THE COURTENAY WIND FARM PROJECT

Case No. PU-15_____
Exhibit ___(PBJ-1)

Resource Planning Testimony

May 6, 2015

PUBLIC DOCUMENT: TRADE SECRET INFORMATION EXCISED

– PUBLIC DATA –

Table of Contents

Schedules

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND TITLE.

A. My name is Paul B. Johnson. I am Director of Resource Planning and Bidding for Xcel Energy.

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I have worked for Xcel Energy since July 2014 in the area of resource planning. In my current role, I am responsible for the direction and oversight of electric Resource Planning for the five-state integrated Northern States Power Company system (NSP System), which provides electric service to customers in North Dakota, South Dakota, Minnesota, Wisconsin, and Michigan.

My responsibilities include directing the development of resource plans, and working closely with modeling to complete the analyses required for those plans. In addition, I lead the effort in providing resource analysis and planning guidance for other Company planning activities and regulatory filings. I also oversee the development and execution of Requests for Proposals (RFP), the modeling for asset acquisition assessments, and provide long-term pricing guidance for purchased power negotiations. My resume is provided as Exhibit___(PBJ-1), Schedule 1.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I address the impact and benefits of adding the 200 MW Courtenay Wind Project to the Xcel Energy system as a Company-owned asset. I first describe

how we used the Strategist resource planning model to evaluate and identify the benefits of the Project, including details about the cost inputs used and cost sensitivity tests conducted in the Strategist modeling. I then provide the results of our analysis including the benefits of adding the Project to our system as a Company-owned asset. These results include comparing the Company-owned asset to adding the Project to our system through a power purchase agreement (PPA) with Geronimo Energy as initially approved by the Commission, as well as a comparison to not adding the Project to our system at all.

II. STRATEGIST ANALYSIS OF COURTENAY PROJECT

Q. HOW DID THE COMPANY EVALUATE THE COST-EFFECTIVENESS OF THE PROJECT?

A. We used the Strategist resource planning model to evaluate the cost effectiveness of the Courtenay Wind Project as a Company-owned resource. The Strategist Planning model simulates the operation of the NSP System and estimates the total cost of energy over the life of the Project on a present value basis. We use the model to test results under a range of input assumptions. To assess the Project's impact on customer costs, we simulated the operation of the NSP System over the next 40 years, with and without the addition of the 200 MW of wind generation from the Courtenay Project, as well as in comparison to purchasing the output of the Project through the PPA.

Q. WHAT WERE THE PRINCIPAL MODELING INPUTS FOR THE STRATEGIST MODELING OF THE COURTENAY PROJECT?

A. For Company-owned projects, the upfront purchase price needs to be translated into a projection of annual revenue requirement associated with financing, operations, depreciation, and taxes, including the addition of allowance for funds used during construction (AFUDC). Projections of on-going capital investments and annual operating and maintenance expenses also need to be developed.

To create a total annual cost of ownership estimate, we used a spreadsheet model with the detailed project-level assumptions and transferred that annual total cost estimate directly into Strategist. The spreadsheet model used cost of capital assumptions consistent with the 2016-2030 Upper Midwest Resource Plan. In addition, the spreadsheet model assumed the Company's forecasted net operating loss (NOL), which is currently expected to dissipate in the 2019-2021 timeframe.

While the upfront capital investments are well defined, we conducted two sensitivity tests to assess the impact of variations in capital expenditures on the project's benefits. We refer to these as Capital Sensitivity 1, and Capital Sensitivity 2, which are respectively **[TRADE SECRET BEGINS…**

…TRADE SECRET ENDS] approximately $300 million capital cost estimate for this project, plus about $12.5 million for AFUDC.

These two sensitivity tests also include the AFUDC associated with these higher capital outlays. And because on-going capital investments and O&M expenses are subject to some uncertainty due to unforeseen equipment failures and changing costs within the industry, we also conducted sensitivity tests for

those costs coming in at +/- 25 percent of our projections.

The economic benefit of an owned wind project is also highly-dependent on the annual generation from the site and the number of years the project is anticipated to be in service. Each additional MWh produced by a Company-owned project increases the value of the project because the higher the production, the lower the average costs will be, and therefore, the larger the benefits. To test how average net capacity factors impact the benefits of the Courtenay Project, we conducted sensitivity tests of +/- 5 percent of the Courtenay Project's expected average annual capacity factor of 46.1 percent, based on our updated wind study which is attached to my testimony as Schedule 2.

This net capacity factor is higher than the generic net capacity factor assumption of **[TRADE SECRET BEGINS… …TRADE SECRET ENDS]** provided in the RFP bid for the Courtenay Project since turbines had not yet been selected at the time the bid was submitted. The base assumption for the service life the Courtenay Project is 25 years (as compared to 20 years under the PPA), and sensitivities were performed for 20-year and 30-year lives for the Project.

Given the principal benefit of wind generation is the displacement of fossil-fueled generation, sensitivity testing was also performed on the Project's impact on system costs when natural gas prices are low and when they are high.

Q. PLEASE DESCRIBE THE OTHER PRINCIPLE ELEMENTS OF THE MODELING.

A. For the other modeling inputs we utilized our most recent resource planning model, which is the same one used for our 2016-2030 Upper Midwest Resource Plan. Consequently, several underlying assumptions have changed for our analysis of Company ownership of the Courtenay Project in addition to capacity factor and resource life.

The Strategist model included a wind integration cost to account for incremental operating reserves that may be required to support the intermittent nature of the projects. We performed a new wind integration study as part of our most recent Resource Plan, which showed integration costs of $1.10/MWh (2014$) applied to resources currently included to meet the Company's Load Obligations going forward.

In accordance with MISO's latest Effective Load Carrying Capability analysis, we modeled the Courtenay Project as having an accredited capacity value of 14.8 percent. However, per MISO's tariff and business practices, for the project to receive accreditation as a capacity resource it must have firm delivery rights either with Network Resource Interconnection Service or firm transmission service (Network Integration Transmission Service or Firm Point-to-Point Transmission Service). Our expectation is that this Project will not be given this designation until 2021 when various transmission system upgrades, including MISO's Multi-Value Portfolio projects, are complete. Our modeling efforts reflect the expected capacity accreditation in 2021.

The Strategist model does not explicitly model transmission congestion and

line losses for new resources. To ensure that we are accounting for all the costs associated with our wind proposal, we included the congestion and line loss estimates from MISO's 2012 Promod model. The Promod model contains detailed information on the transmission topology in MISO, and has the ability to forecast hourly prices at individual nodes throughout the system. It is the same model that MISO used in their most recent round of transmission planning analysis, and contains all planned upgrades to the transmission system that may impact transmission congestion in the future. The difference in price between any two locations within MISO is interpreted at the combined impact of transmission system congestion and line losses.

Q. WHAT ARE THE COST BENEFITS OF THE PROJECT AS QUANTIFIED BY THE STRATEGIST ANALYSIS?

A. Wind generation produces financial benefits by reducing the costs of both fossil-fuel generation and purchased energy from the market. When wind resources are producing energy, generation from conventional resources such as natural gas plants can be reduced without impacting the reliability of service to our customers. Adding the energy from the 200 MW Courtenay Project to our system is expected to avoid the purchase of about 58 billion cubic feet of natural gas over the Project's service life, as well as avoid the purchase of approximately 8,173 gigawatt hours of energy. The Strategist analysis accounts for these cost savings, as well as the impact of the capital commitments associated with adding the Project to our system.

The results of our Strategist analysis in the tables below show that as compared to not adding it to the NSP system, the Courtenay Project will

result in net savings for our customers under all sensitivity tests conducted.

Table 1: PVRR Results ($millions)

PVRR, Current Assumptions ($M)	Base	Low Gas	High Gas	Markets On	30 Year Operating Life	20 Year Operating Life	+5% Energy Production	-5% Energy Production	Capital Sensitivity 1	Capital Sensitivity 2	+25% On-Going Ownership Costs	-25% On-Going Ownership Costs
Base Case (No Project)	$46,015	$43,248	$50,002	$45,519	$46,015	$46,015	$46,015	$46,015	$46,015	$46,015	$46,015	$46,015
Courtenay Own	$45,918	$43,198	$49,844	$45,447	$45,909	$45,995	$45,872	$45,949	$45,935	$45,952	$45,939	$45,897

Table 2: Incremental PVRR from Base Case ($millions)

PVRR Delta, Current Assumptions ($M)	Base	Low Gas	High Gas	Markets On	30 Year Operating Life	20 Year Operating Life	+5% Energy Production	-5% Energy Production	Capital Sensitivity 1	Capital Sensitivity 2	+25% On-Going Ownership Costs	-25% On-Going Ownership Costs
Courtenay Own	($97)	($50)	($159)	($72)	($106)	($20)	($143)	($66)	($80)	($63)	($76)	($117)

Q. WHAT DID STRATEGIST SHOW THE COST BENEFITS ARE OF THE COURTENAY PROJECT AS A COMPANY-OWNED RESOURCE RATHER THAN AS A PPA?

A. Company ownership compares favorably to the PPA under any sensitivity other than a 20-year life (which is somewhat offset by the residual value of owning the assets comprising the Courtenay Project).

First, we compared Company ownership versus the PPA utilizing the estimated capacity factor assumed in the PPA. The estimated capacity factor was provided in Geronimo's RFP bid and developed before specific turbines were selected and our detailed wind study was completed. Second, we compared Company ownership to the PPA utilizing the updated turbine specific net capacity factor identified in our revised wind study. Utilizing the updated net capacity factor and assuming a 25-year life (consistent with our typical assumptions for a Company-owned project), Company ownership

compares favorably to the PPA under any circumstance other than a 20-year life sensitivity as shown in the table below:

Table 3: Incremental PVRR from PPA ($ millions)

PVRR Delta, Current Assumptions ($M)	Base	Low Gas	High Gas	Markets On	30 Year Operating Life	20 Year Operating Life	+5% Energy Production	-5% Energy Production	Capital Sensitivity 1	Capital Sensitivity 2	+25% On-Going Ownership Costs	-25% On-Going Ownership Costs
Courtenay PPA	($62)	($29)	($103)	($42)	($62)	($62)	($82)	($57)	($62)	($62)	($62)	($62)
Courtenay Own	($97)	($50)	($159)	($72)	($106)	($20)	($143)	($66)	($80)	($63)	($76)	($117)
Own vs. PPA	($35)	($21)	($55)	($31)	($44)	$42	($60)	($9)	($18)	($1)	($14)	($55)

Q. DID THE COMPANY CALCULATE THE STRATEGIST RESULTS IN TERMS OF LEVELIZED COST?

A. Yes. An alternate way of presenting the Strategist results is by calculating the levelized price of the project and the other costs and benefits associated with it. Levelized prices are a fixed $/MWh price that have the same NPV as the actual cost streams generated by Strategist. For the sake of comparison, the 20 year levelized cost of the Courtenay PPA was **[TRADE SECRET BEGINS… …TRADE SECRET ENDS].** As mentioned previously, in addition to the direct project costs, the Strategist model also adds cost for wind integration, transmission congestion, and line losses. The primary benefit of the project is displaced generation from fossil fuel resources, but the model also tracks benefits from avoided CO_2 emissions and capacity credit. The table below illustrates how the levelized costs of the agreements are more than offset by the value of avoided generation.

Table 4: Levelized Costs Analysis - $/MWh

	[Trade Secret Begins
Revenue Requirements	
Wind Integration	
Congestion/Line Losses	
Avoided Fossil Fuel	
Capacity Credit	
	Trade Secret Ends]
Net Cost (Benefit)	($10.60)

Q. WHAT OTHER BENEFITS DOES THE COURTENAY PROJECT PROVIDE?

A. In addition to the economic benefits, adding additional wind at favorable pricing provides a hedge against future increases in natural gas prices, market energy costs, and CO_2 regulation. This is primarily because the wind displaces thermal generation or market purchases that are subject to volatility in fuel, power, and emissions costs. To illustrate the benefit of the Courtenay Project, the table below shows the base case volumes of natural gas, market purchases, and CO_2 emissions – and the deltas against these factors for the Project.

Table 5: Hedge Value

Total System 2016-2042	**CO2** *Million tons*	**Natural Gas** *bcf*	**Market Purchases** *GWh*
Base Case (No Project)	565	2,129	103,811
Add Courtenay	(15)	(58)	(8,173)

Q. WHAT IS THE ESTIMATED RATE IMPACT ON THE COMPANY'S NORTH DAKOTA CUSTOMERS?

A. The impacts to our customers will be different under the Company's ownership as opposed to through our purchase of the output of the Project's energy under a PPA. This is mainly due to the different rate treatment for Company-owned projects (through rate base or capital riders) and PPAs (through the Fuel Cost Recovery Rider). Due to this, there will be a slight increase in expenses during the interim period while cost recovery is accomplished through the Renewable Energy Rider (RER)) in the first few years of Company ownership of the Courtenay Project. Soon after initial operation, however, we expect that customers' overall bills will be lower than otherwise as a result of our proposed resource acquisition. Our Strategist dispatch simulation forecasts that the cost of the Courtenay Project proposed in this Petition will be more than offset by decreases in the cost of fossil fuel and other purchased energy.

The table below estimates how average rates will be affected by the proposed wind project. We used the output of our Strategist model divided by our forecasted sales volume to develop these rate impact estimates.

Table 6: Annual Rate Impact Analysis

	2015	2016	2017	2018	2019	2020
Base Rates	0.00¢/kWh	0.02¢/kWh	0.09¢/kWh	0.06¢/kWh	0.06¢/kWh	0.04¢/kWh
Fuel Clause	0.00¢/kWh	0.00¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh
Avoided Fuel & Purchased Power	0.00¢/kWh	0.00¢/kWh	(0.05¢/kWh)	(0.05¢/kWh)	(0.06¢/kWh)	(0.05¢/kWh)
Net Rate Impact	**0.004¢/kWh**	**0.018¢/kWh**	**0.040¢/kWh**	**0.014¢/kWh**	**0.014¢/kWh**	**(0.008¢/kWh)**

	2021	2022	2023	2024	2025	2026
Base Rates	0.01¢/kWh	0.01¢/kWh	0.00¢/kWh	0.00¢/kWh	0.00¢/kWh	-0.01¢/kWh
Fuel Clause	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh
Avoided Fuel & Purchased Power	(0.06¢/kWh)	(0.06¢/kWh)	(0.06¢/kWh)	(0.06¢/kWh)	(0.06¢/kWh)	(0.06¢/kWh)
Net Rate Impact	**(0.038¢/kWh)**	**(0.042¢/kWh)**	**(0.050¢/kWh)**	**(0.055¢/kWh)**	**(0.056¢/kWh)**	**(0.062¢/kWh)**

	2027	2028	2029	2030	2031	2032
Base Rates	0.08¢/kWh	0.08¢/kWh	0.08¢/kWh	0.08¢/kWh	0.08¢/kWh	0.07¢/kWh
Fuel Clause	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh
Avoided Fuel & Purchased Power	(0.06¢/kWh)	(0.07¢/kWh)	(0.07¢/kWh)	(0.07¢/kWh)	(0.11¢/kWh)	(0.10¢/kWh)
Net Rate Impact	**0.028¢/kWh**	**0.023¢/kWh**	**0.018¢/kWh**	**0.018¢/kWh**	**(0.022¢/kWh)**	**(0.016¢/kWh)**

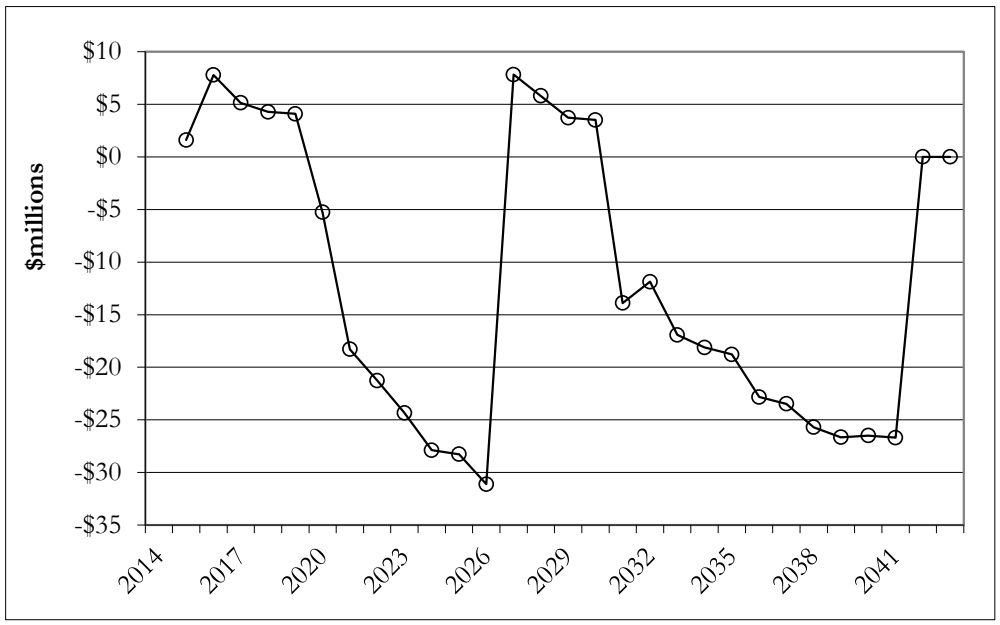
	2033	2034	2035	2036	2037	2038
Base Rates	0.07¢/kWh	0.07¢/kWh	0.07¢/kWh	0.07¢/kWh	0.07¢/kWh	0.06¢/kWh
Fuel Clause	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh	0.01¢/kWh
Avoided Fuel & Purchased Power	(0.11¢/kWh)	(0.11¢/kWh)	(0.11¢/kWh)	(0.12¢/kWh)	(0.11¢/kWh)	(0.12¢/kWh)
Net Rate Impact	**(0.027¢/kWh)**	**(0.029¢/kWh)**	**(0.030¢/kWh)**	**(0.039¢/kWh)**	**(0.040¢/kWh)**	**(0.044¢/kWh)**

Q. PLEASE EXPLAIN THE VARIATION IN RATE IMPACTS ASSOCIATED WITH THE COURTENAY PROJECT.

A. As shown in Table 6, we estimate that there will be an initial base rate impact for Company ownership of the Courtenay Project in 2017, which will then rapidly decline through 2026 as the project is depreciated. The Project's costs are also further offset by avoided fuel and purchased power expenses beginning in 2017. Upon expiration of the Project's 10-year Production Tax Credit, which is discussed in the testimony of Company Witness Gregory Ford, there is another spike in base rates.

Figure 1 below details the $/MWh system costs/savings associated with the Courtenay Project, which shows a significant and growing net savings starting in 2020, after several years of higher revenue requirements, that grows through 2026 primarily due to increasing depreciation benefits. The spike in 2027 represents the first year of not having the benefit of the federal production tax credit, after which system costs significantly decline again.

Figure 1: Annual Cost (Savings) of Company Ownership



III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

Paul B. Johnson
Director Resource Planning and Bidding
Xcel Energy
414 Nicollet Mall
Minneapolis, MN 55401
612-330-6238
paul.b.johnson@xcelenergy.com

PROFESSIONAL EXPERIENCE

Director Resource Planning and Bidding **July 2014 –Present**

Xcel Energy, Minneapolis, MN

- Develop and direct the systems, processes and personnel required to prepare effective and prudent long term system plans for each of the four Xcel Energy operating utilities.
- Develop and direct the systems, processes and personnel required to conduct effective and fair power solicitation processes to procure needed power and energy to meet native load demand and energy requirements and achieve cost reductions in the Xcel supply portfolios.
- Direct acquisition of up to 800 MW per year of additional capacity and for management of the various state resource planning processes in a manner to fulfill requirements and meet company objectives meeting native load requirements and company asset growth goals.

Manager Power Supply Planning **March 2012—June 2014**

Old Dominion Electric Cooperative (ODEC), Glen Allen, VA, a large G&T Cooperative serving 11 distribution cooperative members located in VA, MD and DE who serve over 1.3 million customers with a peak load of about 3000 MW.

- Directed long term power supply area of ODEC managing all ongoing power supply analysis, requests for proposals, PPA negotiations for renewable and thermal resources and planning analysis and issue or hot topic updates responsive to ODEC Board requests which meets monthly.
- Directed selection, implementation and ongoing management and updates of all planning models and data sources used for long term planning.
- Worked effectively and collaboratively with all areas of ODEC to successfully fulfill corporate and business unit objectives for current budget year.
- Actively develop staff providing growth opportunities within power supply planning and with other areas of ODEC.
- Kept abreast of developments and trends in PJM and electric industry and evaluate potential impact as a part of long term planning efforts and updates to executive management and Board members.

President, S&P Energy, LLC **October 2011--February 2012**

I formed S&P Energy LLC October 2011in response to interest by others in my network to work with other consulting firms and development companies with all aspects of renewable project development and marketing (permitting, interconnection, off-take prospects and contracting, RFP responses, etc.).

- Worked as contract consultant with Bridge Energy Group as key resource for interconnection report development and filing support for large Californian utility to the California ISO involving over 120 reports (November 2011through January 2012)
- Pursued consulting contract negotiations for work with a couple renewable project developers and biomass fuel production facility developers.

Sr. Manager, Development North central and Eastern Regions **April 2009—May 2011**

RES Americas, Minneapolis, MN, a national wind and solar project development and construction company. I have management responsibility of regional office in Minneapolis under Regional Vice

President Minneapolis Office has active project pipeline of nearly 2000 MW.

- Direct project management responsibility for development and power marketing of 300 MW Wind Project in southeastern, MN Successfully initiated and navigated permitting to advanced stage resulting in MPUC unanimous October 2010 approval of site permit and certificate of need. Led effort to successfully gain unanimous Mower County Commissioner approval of permits for two transmission routes and three substation sites. Provided direction and support for project interconnection options and study evaluation and effective and timely interaction with Midwest Independent System Operator (MISO) staff.
- As member of company-wide management team participated in 2010 effort to evaluate and refine RES Americas business strategy and identify key implementation efforts.
- Established and maintained project marketing relationships and RFP follow-up with electric utilities in MN, WI, IA, OH and TN.
- Actively monitored renewable market project development and sale opportunities which resulted in relationships with new power purchase prospects in upper Midwest and Eastern US.
- Led effort to evaluate potential biomass fuel opportunity and led effort to develop a biomass fuel business plan for generation market in US and Europe. This effort relied on extensive biomass fuel and biomass power market research.
- Identified and completed initial due diligence for potential acquisition of biomass fuel planting, harvesting and combustion technologies for utility-scale greenfield and retrofit biomass power generation projects.
- Completed preliminary work on strategic approach for wind project development in eastern US based on current and projected changes in renewable market and electric utility generation plans.

Several key positions with Minnesota Power, Duluth, MN **June 1999—April 2009**

An 1800 MW investor-owned electric utility serving 140,000 customers.

Renewable Energy Project Development Manager **October 2006—April 2009**

- Developed and led turbine 2008 purchase solicitation, screening and contract negotiation process which resulted in executed contract for 33 turbine project in North Dakota.
- Developed and gained management support for capital budget and project development plan for several 100 MW of wind generation development. Supported executive management's effort to secure budget and initial project approval.
- Initiated and continued to direct multi-year wind prospecting effort which resulted in met tower siting and installation on several project site in northeastern Minnesota. Prospecting effort also identified large area with high average winds within economic distance of grid interconnection. Oversaw successful wind option acquisition effort with sufficient land and wind rights to support substantial wind project development.
- Provided site control and project information necessary to maintain interconnection study process and avoid higher study costs.
- Developed and directed 2004 and 2007 All Source Request for Proposals through bid completeness, evaluation, short-list, contract negotiation and filing with state public utilities commission (all filed contracts approved).
- Successfully led negotiation team for four wind-based power purchase agreements totally 156 MW.
- Developed, maintains and directs implementation of renewable strategy responsive to corporate strategy and direction of key state and federal policies.
- Developed and managed relationships with major wind developers, turbine suppliers and regulators essential for continuing to increase wind portion of Minnesota Power renewable power supply.
- Managed hand-off to project construction team of permitted, sited projects with turbines.
- Provided liaison as needed with MP executive management, outside consultants and key landowners to resolve issues and keep wind generation project progress on schedule.

Strategic Initiatives—Project Leader **September 2002—October 2006**

- Directed development and implementation of long term power supply request for proposals for renewable, bridge transactions and long tern purchases; evaluation and PPA negotiation completion by mid-2005.
- Led multi-area effort to develop and maintain MP's long term plan and develop and defend MP's biennial 15-year Resource Plan filed in September 2004.
- Developed long term power sales responses to RFPs and manage post-bid submittal follow-up through buyer screening and short-list announcement
- Identified long term power market and generation technology developments, trends, events and provide assessment executive management.
- Led and manage multi-area generation strategy development to support executive management decisions.
- Managed long term generation asset sale process including buyer due diligence and definitive agreement development.
- Tracked and provided assessments of regional generation development and performance of existing regional generation.

Generation Development –Project Leader **June 1999—August 2002**

- Managed internal generation development agreement compliance.
- Identified and screened generation development opportunities as key member of generation development team and lead project due diligence under executive management direction.
- Led effort to deploy and integrate price forecasting and generation opportunity evaluation tools into management decision processes.
- Monitored electric industry and key data sources for competitive intelligence and use this information to improve timing and focus of generation development.

ELECTRIC UTILITY INDUSTRY COMMITTEE LEADERSHIP OPPORTUNITIES

- Edison Electric Institute Renewables Committee. Committee developed policy proposals on federal renewable policy initiatives to reflect position of member investor-owned utilities)
- EPRI Storage and Renewables Task Force (Biomass/Waste Fuel Working Group Chair) Efforts resulted in gaining $85 million DOE funding commitment to complete engineering and build first 100 MW biomass power using "whole tree energy" technology. Also chaired national biomass technology symposium jointly hosted by EPRI and DOE in Washington, DC.

EDUCATION

Bachelor of Science and **Master of Arts** Environmental Studies
Bemidji State University. Bemidji, MN

Completed extensive graduate studies in organic chemistry, ecology, macro/micro economics, environmental law, politics of pollution and many special topic research papers requiring peer defense. Degree was designed to prepare students to understand industrial environmental issues and regulatory requirements, pollution control and renewable technologies, law and associated environmental impacts. Served as a graduate assistant in the library and physics lab. Completed graduate internship with regional development commission providing technical support to environmental projects.

AWS Truepower®

PREPARED FOR
NORTHERN STATES POWER COMPANY

ENERGY PRODUCTION SUMMARY

Calibrated Assessment of the Wind Resource and Energy Production Using the SiteWind System

APRIL 1, 2015

FOR THE COURTENAY WIND PROJECT

STUTSMAN COUNTY, NORTH DAKOTA

CLASSIFICATION
CONFIDENTIAL

463 NEW KARNER ROAD | ALBANY, NY 12205
awstruepower.com | info@awstruepower.com

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DOCUMENT CONTRIBUTORS

AUTHOR	SUPPORTING AUTHOR	REVIEWER
Dan Michaud Senior Meteorologist	**Bonnie Vehlies** Wind Project Specialist	**Jason Dubois** Senior Meteorologist

DOCUMENT HISTORY

ISSUE	DATE	SUMMARY
A	1 April 2015	Initial Report

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1. INTRODUCTION

AWS Truepower, LLC, was retained by Northern States Power Company (NSPC) to evaluate the long-term wind resource and energy production potential of the proposed Courtenay Wind Project, located in North Dakota, about 30 km to the north-northeast of Jamestown, North Dakota, and 140 km west-northwest of Fargo, North Dakota. This report presents the results of our analysis and briefly describes the methods used to develop the wind resource and energy estimates.

2. WIND MEASUREMENTS

Wind monitoring at the Courtenay project began in July 2010 with the installation of a single monitoring mast, designated Mast 2612. One additional mast, designated Mast 2611, was installed in January 2013. Both masts remain in operation. Table 1 presents basic information about the masts including their geographic coordinates, elevations, periods of record, and sensor heights. NSPC provided the data to AWS Truepower in their raw binary format via ftp. Each data file contained 10-minute average wind speed, direction, and temperature records, along with their standard deviations.

The observed 60-m mean wind speeds are 7.59 m/s at Mast 2611 and 7.67 m/s at Mast 2612. The 60-m annualized mean wind speeds, which take into account repeated months in the data record and weight each calendar month by its number of days, are 7.62 m/s at Mast 2611 and 7.74 m/s at Mast 2612. The annualized wind shear exponents, which represent the rate of wind speed increase with height above ground according to the power law, are 0.213 at Mast 2611 and 0.225 at Mast 2612. The shear was calculated from the mean wind speeds at the highest and lowest monitoring levels based on concurrent valid records at both heights. Only wind speeds greater than 4 m/s, the range of interest for energy production, were used in the calculations.

The Weibull function is an analytical curve that describes the wind speed frequency distribution, or number of observations in specific wind speed ranges. Its two adjustable parameters allow a reasonably good fit to a wide range of actual distributions. *A* is a scale parameter related to the mean wind speed while *k* controls the width of the distribution. Values of *k* typically range from 1 to 3.5, the higher values indicating a narrower distribution. The observed 60-m *k* values, which are 2.30 at Mast 2611 and 2.49 at Mast 2612, are indicative of a reasonably steady wind resource with occasional high wind events. Figure 1 contains a chart showing the observed frequency distribution and the fitted Weibull curve for Mast 2612.

The directional distribution of the wind resource is an important factor to consider when designing the wind project to minimize the wake interference between turbines. Annual wind frequency and energy distribution by direction plots (wind roses) for the onsite masts are presented in Figure 2. The wind roses indicate that the prevailing wind directions are west-northwest through north-northwest.

3. ESTIMATION OF LONG-TERM MEAN WIND SPEED

We obtained historical wind speed data from several nearby potential reference stations operated by the National Weather Service (NWS) and Federal Aviation Administration (FAA), as well as datasets from

three reanalysis datasets (CFSR[1], ERA-I[2], and MERRA[3]), and assessed them for suitability as long-term references.

Mast 2612 was chosen as the primary mast for the analysis because it has the longest data record. Linear regression equations were established using concurrent daily mean wind speeds at Mast 2612 and each potential reference station. Following reviews of the correlations and the time series of reference station annual mean speeds, we selected the Jamestown NWS surface station and the ERA-I dataset to estimate the long-term annual mean speed at Mast 2612. Substitution of the annualized mean wind speeds at the reference stations into the regression equation listed in Table 2 yields a 60-m long-term mean wind speed of 7.70 m/s at Mast 2612.

The climate-adjusted wind speed at Mast 2611 was estimated using a similar technique, but with Mast 2612 now serving as the reference. The regression was performed using concurrent hourly wind speeds; the r-squared value is 0.98. Substitution of the estimated long-term speed at Mast 2612 into the regression equation yields a long-term 60-m mean wind speed of 7.63 m/s at Mast 2611.

Extrapolation of these long-term mean wind speeds using the annualized wind shear exponents yields mean wind speeds of 8.11 m/s at Mast 2611 and 8.21 m/s at Mast 2612 at the 80-m hub height. A summary of the climate adjustments and extrapolation is included in Table 2.

4. ESTIMATION OF LONG-TERM ENERGY PRODUCTION

The energy production of the proposed Courtenay Wind Project was estimated using the Openwind® software. Openwind was developed by AWS Truepower as an aid for the design, optimization, and assessment of wind power projects.[4] The primary input is a wind resource grid generated by a numerical wind flow model, in this case the SiteWind® system. Other inputs include elements of the project design such as the turbine locations, hub height, power curve, and thrust coefficients, as well as the mast data. The SiteWind system and Openwind software and their applications in this project are briefly described below.

The SiteWind System

Numerical wind flow models are used to calculate the wind resource variation across a project area due to changes in terrain and surface roughness. AWS Truepower has developed the SiteWind system to perform these calculations. SiteWind employs both mesoscale and microscale models to simulate the wind climate over a wide range of scales. The mesoscale model assesses regional climate conditions and simulates complex meteorological phenomena such as katabatic (downslope) mountain winds, channeling through mountain passes, lake and sea breezes, low-level jets, and temperature inversions. The microscale model accounts for the localized influences of topography and surface roughness

1 Climate Forecast System Reanalysis (CFSR), which was developed by the National Centers for Environmental Prediction (NCEP), is a global atmosphere-ocean-land-sea ice system which produces 6-hourly outputs at a horizontal resolution of 1/2° latitude and 1/2° longitude. CFSR extends through 2010, while an operational version of CFSR has been employed beginning in 2011.

2 ERA-Interim (ERA-I), which was developed by the European Centre for Medium-Range Weather Forecasts (ECMWF), utilizes a variety of observing systems which have been assimilated into a global three-dimensional grid by numerical atmospheric models at a spectral resolution of T255, or an approximate horizontal resolution of 79 km.

3 Modern-Era Retrospective Analysis for Research and Applications (MERRA), which was developed by the National Aeronautics and Space Administration (NASA), utilizes a variety of observing systems which have been assimilated into a global three-dimensional grid by numerical atmospheric models at a horizontal resolution of 1/2° latitude and 2/3° longitude.

4 Openwind – Theoretical Basis and Validation, Version 1.3, AWS Truewind, LLC, April 2010.

changes and produces a detailed wind resource map and grid. As a final step, the predicted speed and direction are adjusted with on-site data from masts within the project area. This method has been found to be more accurate on the whole than microscale wind flow models on their own.[5]

The mesoscale model used for this analysis was the Mesoscale Atmospheric Simulation System (MASS[6]), a non-hydrostatic weather model used in commercial and research applications. MASS was run in a series of nested grids, with the innermost grid having a spatial resolution of 1.2 km. Using regional weather data, MASS simulated historical weather conditions for a representative sample of days. The MASS output was then coupled to WindMap – a mass-conserving model – which was run on a grid scale of 50 m.[7] Finally, the output of WindMap was adjusted to the wind speed and direction distribution at the two masts within the project area. This last step was performed within Openwind, as described below. The resulting wind resource map is shown in Figure 3.

Openwind

Once the wind resource model has been run, the resource grid file is imported into Openwind to define the wind resource for the project area. The Weibull parameters in the file are converted to directional speed-up ratios relating the wind speed at each grid point to the speed at a reference mast. By associating the model data to a wind speed histogram file for the reference mast, the program is able to adjust the modeled speed distribution to the true speed distribution observed at a point. This method usually produces a more accurate estimate of the energy production than relying on the modeled distributions alone.

A number of reference masts can be used to reduce errors in the predicted spatial variation of the wind resource across the project area. Conventionally, the project area is broken up into sub-regions, each of which is associated with a different mast using the distance-weighted interpolation between masts, as previously described. This avoids discontinuities in wind speeds across the boundaries of areas assigned to different masts and produces a more realistic picture of the spatial variation of the wind resource. Within Openwind, the adjusted wind resource grid is divided into sub-regions associated with different masts to capture variations in the observed speed frequency distribution, although the corresponding impact on energy production estimates is usually relatively small.

AWS Truepower uses the Openwind Deep Array Wake Model (DAWM) to calculate wake losses. This model actually contains two separate wake models operating independently. The first is the Eddy Viscosity model, which is based on the thin-shear-layer approximation of the Navier-Stokes equations assuming axisymmetric wakes of Gaussian cross-sectional form, as originally postulated by Ainslie.[8] The model equations ensure that momentum and mass conservation are observed simultaneously. As inputs, the wake model requires the ambient turbulence intensity at hub height, which influences the initial wake deficit behind each turbine and the rate of wake dissipation; the speed and direction frequency distribution, based on a wind resource grid and associated mast files; the locations of the

5 Beaucage, Philippe and Brower, Michael C, Wind Flow Model Performance – Do More Sophisticated Models Produce More Accurate Wind Resource Estimates?, 6 February 2012

6 Developed for NASA, the US Air Force, and commercial and research applications, MASS is similar to and has been verified against other mesoscale weather models such as MM5 and WRF. For further information, see http://www.meso.com/mass.html.

7 WindMap, developed by AWS Truepower, is a mass-conserving model that adjusts an initial wind field, here supplied by MASS, in response to local variations in topography and surface roughness. See, e.g., Michael Brower, "Validation of the WindMap Model," Proceedings of WindPower 1999, American Wind Energy Association, June 1999.

8 Ainslie, J.F., 1988, Calculating the flowfield in the wake of wind turbines." Journal of Wind Engineering and Industrial Aerodynamics, 27. Pages 213-224.

turbines; and the turbine thrust coefficient curves. Validation of the Openwind Eddy Viscosity model is described elsewhere.[4]

In response to evidence that conventional wake models like the Eddy Viscosity model underestimate wake losses in deep (multi-row) arrays of wind turbines, especially offshore, AWS Truepower implemented a second model designed to handle such situations. This model is loosely based on a theory developed by Frandsen,[9] who postulated that the effect of a deep array of wind turbines on the atmosphere could be represented as a region of increased surface drag, represented by a surface roughness length. Where the wind first impinges on the array, an internal boundary layer (IBL) is created, within which the wind profile is determined by the array roughness rather than by the ambient roughness. This IBL grows with downwind distance, and once its height exceeds the turbine hub height, the hub-height speed impinging upon turbines farther downwind is progressively reduced. According to the Frandsen theory, the effective array roughness is in the range of 1 m to 3 m, or typical of a forest, for mid-range speeds and typical turbine spacings. AWS Truepower modified the Frandsen model to treat each turbine as an isolated island of roughness, a necessary change to permit rapid modifications to the turbine layout for array optimization. In addition, the IBL created by each turbine is assumed to be centered on the turbine's hub height.

In combining the two models, the DAWM implicitly defines "shallow" and "deep" zones within a turbine array. In the shallow zone, the direct wake effects of individual turbines dominate, and the unmodified Eddy Viscosity (EV) model is used to calculate wake deficits; in the deep zone, the deep-array effect is more prominent, and thus, the roughness model is employed. The DAWM has been validated at several offshore and onshore projects.[10]

Results

The energy production was simulated for the Vestas V100-2.0 MW with a 100-m rotor diameter and an 80-m hub height. The turbine layout[11], which was provided by NSPC, is shown on the wind resource map in Figure 3. Each turbine in the layout was associated with the wind speed and direction distribution file from one of the on-site masts.

The average air density was calculated from the wind speed and temperature data from Mast 2612 and adjusted to the mean elevation of the turbines using a standard atmospheric lapse rate. The result was 1.198 kg/m^3.

Plant losses aside from turbine wake losses were estimated from AWS Truepower's experience with other projects and an analysis of site-specific data.[12] The wake loss was estimated by the Openwind program to be 8.0%. Including combined plant losses totaling 11.8%, the total loss is estimated to be 18.8%.

9 Sten Tronæs Frandsen, Turbulence and turbulence-generated structural loading in wind turbine clusters, Risø-R-1188(EN), Risø National Laboratory (January 2007).

10 Brower, Michael C. and Robinson, Nicholas M., "The openWind Deep Array Wake Model – Development and Validation", May 2012.

11 AWST has completed a high-level review of the layout provided and has determined that two turbines within the layout are within 1000 feet of a possibly occupied structure. As these turbines are closer than AWST standard setbacks, it is recommended that Northern States Power Company verify the locations with local authorities.

12 Dan Bernadett, et al., 2012 Backcast Study: A Review and Calibration of AWS Truepower's Energy Estimation Methods, AWS Truepower May 2012.

The gross and net annual energy production estimates for the project are 994.9 GWh and 807.8 GWh, respectively. The net capacity factor is predicted to be 46.1%, and the estimated array-average free-stream wind speed at hub height is 8.24 m/s. A summary of the estimated average free-stream wind speed and gross and net energy production for each turbine is presented in Table 3.

5. UNCERTAINTY ESTIMATE

The uncertainty in the projected long-term hub height wind speed across the project is estimated to be 2.7%. This value incorporates the uncertainties associated with field verification, the onsite measurements, the wind shear extrapolation, the historical climate adjustment, the evaluation period, and the wind flow modeling. The sensitivity of the project output to changes in wind speed was determined to be approximately 3.4% for the given 2.7% uncertainty in mean wind speed. The uncertainties in wind speed frequency distribution and plant losses were combined with the previous total to yield an overall energy production uncertainty of 5.0%, or 40.7 GWh/yr. Table 4 presents the estimated net annual energy production and capacity factor at five confidence levels assuming a 9-year mature operation evaluation period and the same for the first year and for any single year thereafter.

6. SUMMARY

The long-term wind resource at the proposed Courtenay Wind Project was estimated using data from two monitoring masts and correlation with Jamestown and the ERA-I dataset. The energy production was simulated using a wind resource grid developed using SiteWind system, the Openwind software, a wind turbine layout provided by NSPC, and the Vestas V100-2.0 MW turbine with a 100-m rotor diameter at an 80-m hub height, and site average air density of 1.198 kg/m^3. The total wind plant loss is estimated to be 18.8%. The expected average annual net production and capacity factor for the project are 807.8 GWh and 46.1%, respectively, and the predicted array-average wind speed is 8.24 m/s.

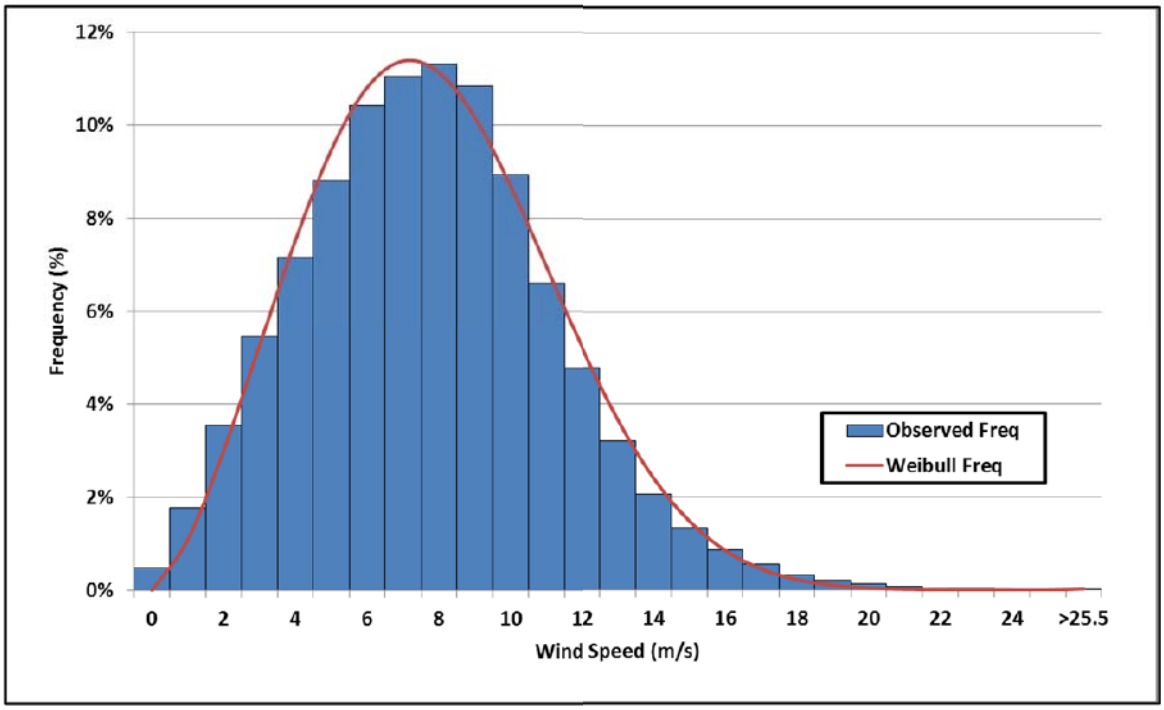

Figure 1. Mast 2612 Observed Wind Speed Frequency Distribution and Fitted Weibull Curve

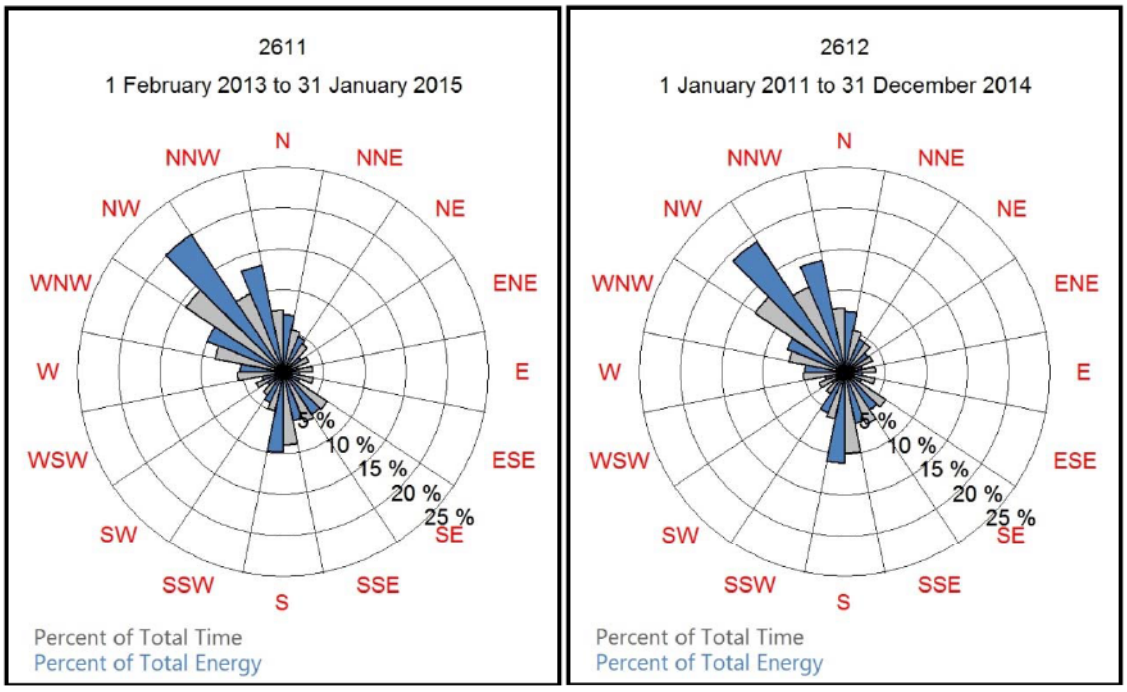

Figure 2. Monitoring Mast Annual Wind Roses

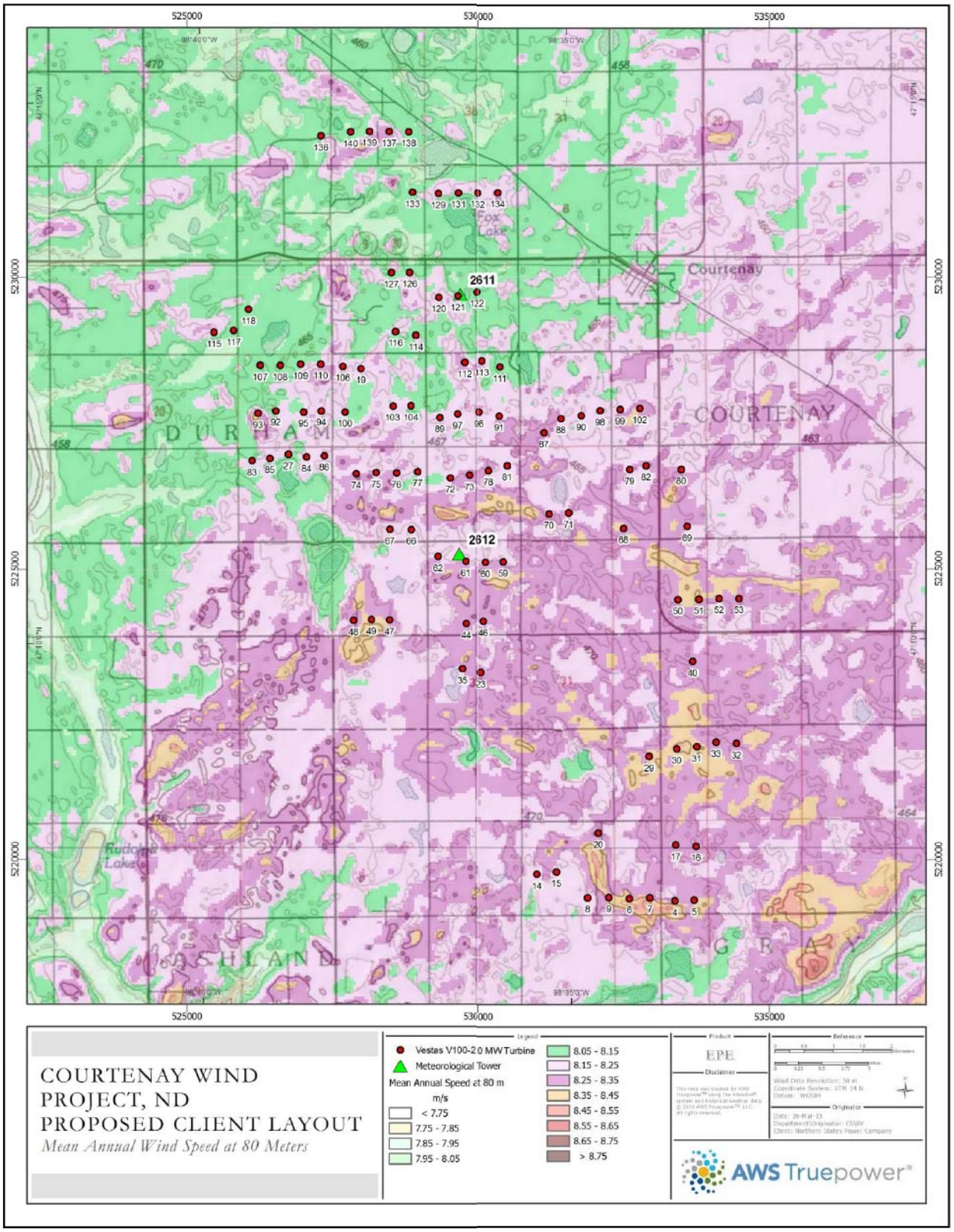

Figure 3. Proposed Courtenay Vestas V100-2.0 MW Turbine Layout

Table 1. Mast Summary

Mast	Site UTM Coordinates (WGS84, Zone 14)		Elevation (m)	Period of Record	Monitoring Heights (m)		
	Easting	Northing			Wind Speed	Wind Direction	Temp
2611	529687	5229709	465	1/29/2013 – 1/31/2015	60, 47, 32	58, 45	59, 2
2612	529671	5225265	471	7/16/2010 – 1/19/2015	60, 47.3, 32	58, 45.5	59, 2

Table 2. Monitoring Mast Long-Term Wind Speed Projection Summary

Mast	Monitoring Height (m)	Reference	Regression Equation	r^2	Long-Term Wind Speed (m/s)	Effective Wind Shear	Projected 80-m Speed (m/s)
2611	60	Mast 2612	y = 0.988x + 0.027	0.98	7.63	0.213	8.11
2612	60	Jamestown, ERA-I	y = 0.683*Jamestown + 0.423*ERA-I + 1.543	0.90	7.70	0.225	8.21

Table 3. Courtenay Wind Speed and Energy Production Detail

Project:	Northern States Power Company - Courtenay Wind Project, ND	
Date:	26-Mar-15	
Comments:	Client Layout	
Turbine Manufacturer/Model:	Vestas V100-2.0 MW	
Turbine Rated Power:	2.00	MW
Hub Height:	80	m
Number of Turbines:	100	
Plant Capacity:	200	MW
Site Air Density:	1.198	kg/m^3

AWS Truepower
Where science delivers performance.

Loss Accounting	
Wake Effect	8.0%
Availability	4.5%
Electrical	3.1%
Turbine Performance	1.2%
Environmental	3.6%
Curtailments	0.0%
Average Total Loss	18.8%

Overall Wind Plant Summary	
Average Free Wind Speed (m/s)	8.24
Gross Plant Production (MWh/yr)	994,937
Net Plant Production (MWh/yr)	807,813
Net Capacity Factor	46.1%

Per Turbine Summary

Turbine ID	Mast Association	Coordinates (WGS84 UTM14) Easting (m)	Northing (m)	Free Speed (m/s)	Gross MWh/yr	Array Eff. (%)	Array Loss (%)	Total Loss (%)	Net MWh/yr	Turbine Rank	Net Capacity Factor (%)	Total TI at 15m/s (%)
4	2612	533382	5219293	8.33	10,076	93.8	6.2	17.3	8,336	19	47.5	8.2
5	2612	533712	5219305	8.34	10,091	94.4	5.6	16.7	8,403	5	47.9	8.2
6	2612	532601	5219337	8.40	10,178	93.0	7.0	18.0	8,346	18	47.6	8.1
7	2612	532949	5219349	8.39	10,153	93.5	6.5	17.5	8,377	14	47.8	8.1
8	2612	531887	5219349	8.18	9,866	94.3	5.7	16.8	8,206	35	46.8	8.3
9	2612	532247	5219355	8.38	10,159	92.9	7.1	18.0	8,327	20	47.5	8.1
14	2612	531014	5219751	8.20	9,879	96.3	3.7	15.0	8,393	8	47.9	8.2
15	2612	531352	5219794	8.22	9,923	94.4	5.6	16.7	8,263	27	47.1	8.3
16	2612	533743	5220232	8.30	10,034	93.1	6.9	17.9	8,240	30	47.0	8.2
17	2612	533396	5220256	8.34	10,082	93.6	6.4	17.4	8,323	21	47.5	8.0
19	2611	527984	5228437	8.20	9,912	90.7	9.3	20.0	7,932	68	45.2	8.5
20	2612	532067	5220456	8.31	10,036	95.4	4.6	15.9	8,444	3	48.2	8.1
23	2612	530047	5223219	8.28	10,022	92.5	7.5	18.4	8,183	37	46.7	8.2
27	2612	526743	5226968	8.17	9,850	90.3	9.7	20.4	7,844	84	44.7	8.7
29	2612	532939	5221783	8.36	10,118	95.5	4.5	15.7	8,527	1	48.6	8.0
30	2612	533413	5221916	8.45	10,228	94.0	6.0	17.1	8,482	2	48.4	7.9
31	2612	533760	5221949	8.39	10,150	92.8	7.2	18.1	8,314	23	47.4	8.0
32	2612	534437	5222008	8.32	10,042	94.6	5.4	16.6	8,379	13	47.8	8.1
33	2612	534089	5222029	8.31	10,036	92.9	7.1	18.0	8,229	31	46.9	8.1
35	2612	529727	5223282	8.24	9,958	94.0	6.0	17.1	8,258	29	47.1	8.2
40	2612	533687	5223411	8.29	10,011	94.9	5.1	16.2	8,384	10	47.8	8.0
44	2612	529790	5224071	8.31	10,062	92.4	7.6	18.5	8,203	36	46.8	8.1
46	2612	530095	5224101	8.27	9,996	91.5	8.5	19.3	8,066	51	46.0	8.2
47	2612	528472	5224135	8.32	10,050	93.4	6.6	17.6	8,284	25	47.3	8.2
48	2612	527861	5224126	8.27	9,985	95.9	4.1	15.4	8,443	4	48.2	8.2
49	2612	528166	5224139	8.38	10,136	92.8	7.2	18.2	8,294	24	47.3	8.1
50	2612	533436	5224475	8.35	10,095	94.4	5.6	16.8	8,403	6	47.9	8.0
51	2612	533799	5224480	8.36	10,125	92.5	7.5	18.4	8,266	26	47.1	8.1
52	2612	534140	5224492	8.30	10,034	92.3	7.7	18.6	8,169	38	46.6	8.2
53	2612	534480	5224492	8.32	10,069	94.2	5.8	16.9	8,365	15	47.7	8.2
59	2612	530435	5225120	8.25	9,960	91.5	8.5	19.3	8,039	59	45.9	8.4
60	2612	530131	5225111	8.26	9,980	89.5	10.5	21.0	7,882	75	45.0	8.4
61	2612	529785	5225137	8.23	9,950	90.9	9.1	19.8	7,982	63	45.5	8.4
62	2612	529304	5225220	8.22	9,934	92.3	7.7	18.6	8,089	46	46.1	8.3
66	2612	528846	5225680	8.20	9,897	90.3	9.7	20.4	7,880	76	44.9	8.5
67	2612	528480	5225683	8.21	9,907	92.1	7.9	18.8	8,048	55	45.9	8.3
68	2612	532500	5225693	8.34	10,099	94.3	5.7	16.8	8,402	7	47.9	8.0
69	2612	533596	5225726	8.26	9,975	94.5	5.5	16.6	8,316	22	47.4	8.1
70	2612	531227	5225940	8.26	9,978	92.3	7.7	18.5	8,128	42	46.4	8.3
71	2612	531563	5225956	8.25	9,963	91.7	8.3	19.1	8,059	52	46.0	8.2
72	2612	529516	5226563	8.22	9,915	90.6	9.4	20.1	7,924	69	45.2	8.4
73	2612	529848	5226610	8.28	10,000	89.5	10.5	21.0	7,898	73	45.0	8.3
74	2612	527906	5226636	8.25	9,977	90.9	9.1	19.8	7,996	61	45.6	8.4
75	2612	528248	5226654	8.26	9,978	89.3	10.7	21.2	7,859	80	44.8	8.4
76	2612	528594	5226650	8.25	9,969	89.4	10.6	21.2	7,859	81	44.8	8.5

Table 3 Continued. Courtenay Wind Speed and Energy Production Detail

Per Turbine Summary												
Turbine ID	Mast Association	Coordinates (WGS84 UTM14) Easting (m)	Northing (m)	Free Speed (m/s)	Gross MWh/yr	Array Eff. (%)	Array Loss (%)	Total Loss (%)	Net MWh/yr	Turbine Rank	Net Capacity Factor (%)	Total TI at 15m/s (%)
77	2612	528960	5226672	8.20	9,904	90.0	10.0	20.6	7,864	78	44.9	8.6
78	2612	530182	5226685	8.27	9,981	89.4	10.6	21.1	7,875	77	44.9	8.4
79	2612	532607	5226699	8.25	9,951	92.0	8.0	18.9	8,073	50	46.0	8.2
80	2612	533494	5226703	8.27	9,980	94.9	5.1	16.3	8,352	16	47.6	8.1
81	2612	530504	5226767	8.22	9,915	91.0	9.0	19.7	7,960	66	45.4	8.5
82	2612	532889	5226766	8.27	9,994	91.6	8.4	19.2	8,074	49	46.1	8.3
83	2612	526122	5226857	8.16	9,835	95.2	4.8	16.0	8,259	28	47.1	8.5
84	2612	527054	5226921	8.18	9,865	88.6	11.4	21.8	7,710	96	44.0	8.7
85	2612	526421	5226898	8.18	9,869	91.6	8.4	19.2	7,973	64	45.5	8.5
86	2612	527355	5226943	8.23	9,951	89.5	10.5	21.1	7,853	82	44.8	8.5
87	2611	531134	5227331	8.28	10,016	92.3	7.7	18.5	8,160	39	46.5	8.3
88	2611	531427	5227572	8.23	9,938	92.3	7.7	18.6	8,094	43	46.2	8.4
89	2611	529341	5227597	8.23	9,946	89.4	10.6	21.1	7,845	83	44.7	8.5
90	2611	531775	5227623	8.21	9,923	91.9	8.1	19.0	8,042	57	45.9	8.4
91	2611	530367	5227617	8.21	9,929	89.3	10.7	21.2	7,819	88	44.6	8.6
92	2611	526525	5227712	8.16	9,848	89.0	11.0	21.5	7,733	93	44.1	8.6
93	2611	526223	5227672	8.34	10,111	92.0	8.0	18.8	8,209	34	46.8	8.3
94	2611	527306	5227712	8.20	9,907	87.0	13.0	23.3	7,601	100	43.4	8.6
95	2611	527002	5227694	8.18	9,877	88.3	11.7	22.1	7,695	98	43.9	8.7
96	2611	530018	5227684	8.23	9,953	89.1	10.9	21.4	7,822	87	44.6	8.6
97	2611	529644	5227659	8.20	9,899	88.9	11.1	21.6	7,763	90	44.3	8.6
98	2611	532103	5227708	8.24	9,965	92.6	7.4	18.3	8,140	40	46.4	8.5
99	2611	532442	5227730	8.22	9,929	92.3	7.7	18.6	8,078	48	46.1	8.4
100	2611	527711	5227694	8.16	9,859	89.4	10.6	21.2	7,772	89	44.3	8.6
102	2611	532781	5227746	8.36	10,116	93.9	6.1	17.1	8,383	11	47.8	8.2
103	2611	528537	5227794	8.17	9,863	90.1	9.9	20.5	7,837	85	44.7	8.5
104	2611	528842	5227799	8.15	9,841	89.1	10.9	21.4	7,737	92	44.1	8.6
106	2611	527672	5228474	8.20	9,901	90.3	9.7	20.3	7,890	74	45.0	8.5
107	2611	526259	5228491	8.13	9,807	91.5	8.5	19.3	7,918	71	45.2	8.6
108	2611	526600	5228491	8.12	9,794	89.1	10.9	21.4	7,700	97	43.9	8.7
109	2611	526948	5228509	8.14	9,817	89.3	10.7	21.3	7,731	94	44.1	8.6
110	2611	527293	5228512	8.19	9,891	90.1	9.9	20.5	7,863	79	44.8	8.5
111	2611	530380	5228459	8.12	9,791	89.0	11.0	21.5	7,690	99	43.9	8.7
112	2611	529765	5228540	8.27	10,014	90.5	9.5	20.2	7,991	62	45.6	8.4
113	2611	530070	5228561	8.19	9,884	88.5	11.5	21.9	7,721	95	44.0	8.5
114	2611	528926	5229005	8.14	9,821	90.4	9.6	20.3	7,831	86	44.7	8.5
115	2611	525466	5229055	8.21	9,919	95.9	4.1	15.4	8,388	9	47.8	8.3
116	2611	528579	5229071	8.16	9,845	92.6	7.4	18.3	8,042	58	45.9	8.4
117	2611	525804	5229088	8.13	9,811	93.1	6.9	17.9	8,058	53	46.0	8.4
118	2611	526058	5229448	8.15	9,829	94.9	5.1	16.3	8,227	32	46.9	8.3
120	2611	529317	5229656	8.20	9,903	90.7	9.3	20.0	7,924	70	45.2	8.4
121	2611	529650	5229681	8.13	9,807	89.7	10.3	20.9	7,759	91	44.3	8.5
122	2611	529979	5229744	8.13	9,802	92.2	7.8	18.7	7,973	65	45.5	8.6
126	2611	528818	5230081	8.15	9,829	91.1	8.9	19.6	7,899	72	45.1	8.5
127	2611	528509	5230078	8.12	9,800	93.0	7.0	18.0	8,035	60	45.8	8.5
129	2611	529311	5231442	8.21	9,922	91.9	8.1	18.9	8,044	56	45.9	8.4
131	2611	529653	5231452	8.16	9,843	91.6	8.4	19.2	7,956	67	45.4	8.5
132	2611	529994	5231459	8.20	9,908	92.2	7.8	18.7	8,054	54	45.9	8.4
133	2611	528871	5231463	8.12	9,797	93.6	6.4	17.4	8,090	45	46.1	8.5
134	2611	530342	5231464	8.27	10,001	94.6	5.4	16.5	8,348	17	47.6	8.3
136	2611	527300	5232427	8.11	9,780	97.2	2.8	14.3	8,381	12	47.8	8.3
137	2611	528466	5232501	8.29	10,036	92.8	7.2	18.1	8,219	33	46.9	8.3
138	2611	528803	5232499	8.10	9,760	94.0	6.0	17.1	8,091	44	46.1	8.5
139	2611	528134	5232506	8.18	9,875	92.8	7.2	18.1	8,087	47	46.1	8.3
140	2611	527807	5232497	8.09	9,745	94.6	5.4	16.5	8,134	41	46.4	8.3

Table 4. Estimated Energy Production and Net Capacity Factor at Five Confidence Levels (Evaluation Period [Years 2-10], Annual, and First Year)

Probability of Exceedance	Evaluation Period Average Energy Production (GWh)	Evaluation Period Average Capacity Factor (%)	Annual Energy Production (GWh)	Annual Capacity Factor (%)	First Year Energy Production (GWh)	First Year Capacity Factor (%)
P50	807.8	46.1	807.8	46.1	788.4	45.0
P75	780.3	44.5	770.5	43.9	738.3	42.1
P90	755.6	43.1	736.9	42.0	693.2	39.5
P95	740.8	42.3	716.8	40.9	666.2	38.0
P99	713.1	40.7	679.1	38.7	615.6	35.1

APPENDIX A – ENERGY PRODUCTION LOSSES

Table A1. Courtenay Vestas V100-2.0 MW Detailed Energy Production Loss Accounting

Wake Effect	**First Year**	**Long-Term**
Internal Wake Effect of the Project	8.0%	8.0%
Wake Effect of Existing or Planned Projects	0.0%	0.0%
Wake Effect Total	**8.0%**	**8.0%**
Availability		
Contractual Turbine Availability*	3.0%	3.0%
Non-Contractual Turbine Availability*	0.7%	0.7%
Long-term Availability Correlation with High Wind Events*	0.1%	0.1%
Availability of Collection & Substation	0.2%	0.2%
Availability of Utility Grid	0.3%	0.3%
Plant Re-start after Grid outages	0.2%	0.2%
First-Year Plant Availability*	2.9%	0.0%
Availability Total	**7.2%**	**4.5%**
Electrical		
Electrical Efficiency**	2.5%	2.5%
Power Consumption of Extreme Weather Package	0.6%	0.6%
Electrical Total	**3.1%**	**3.1%**
Turbine Performance		
Sub-Optimal Operation*	0.5%	0.5%
Power Curve Adjustment	0.6%	0.6%
High Wind Control Hysteresis	0.1%	0.1%
Inclined Flow	0.0%	0.0%
Turbine Performance Total	**1.2%**	**1.2%**
Environmental		
Icing	2.0%	2.0%
Blade Degradation	0.7%	1.2%
Low/High Temperature Shutdown	0.0%	0.0%
Site Access	0.2%	0.2%
Lightning	0.2%	0.2%
Environmental Total	**3.1%**	**3.6%**
Curtailments		
Directional Curtailment	0.0%	0.0%
PPA Curtailment	0.0%	0.0%
Environmental Curtailment	0.0%	0.0%
Curtailment Total	**0.0%**	**0.0%**
Total Losses	**20.8%**	**18.8%**

*Reduced from AWS Truepower standards based on the use of the AOM 5000 availability warranty.
**Increased from AWS Truepower standard based on provided electrical studies.

Wake Effect

Wind turbines alter the free stream wind flow which may reduce the energy production of a wind project. Losses due to this wake effect are divided into the following categories:

- **Internal Wake Effect of the Project:** This loss accounts for the wake effect from turbines within the project being analyzed.
- **Wake Effect of Existing or Planned Projects:** This loss accounts for the wake effect of existing or planned projects located adjacent to the project being analyzed for which sufficient information was available to make a precise estimate of their impact on the project being studied.

Availability

A plant or turbine is said to be available when it is capable of generating its full rated output, given sufficient wind. Availability losses occur when some turbines in a project, or an entire project, are inoperative for some reason. Availability losses assume that the Vestas AOM5000 contract (as described in the documents downloaded from the Geronimo Energy Sharefile dataroom[13]) is in place for a 10-year term.

- **Contractual Availability of Wind Turbines:** Turbine downtime traditionally covered under availability warranties (while in effect); AWS Truepower typically assumes a baseline time-weighted turbine availability of 97%. The AOM5000 contract has a 97% production-based availability guarantee.
- **Non-Contractual Availability of Wind Turbines:** AWS Truepower attributes an additional 1.3% of turbine downtime as a result of force majeure events, scheduled maintenance, and repair delays due to high winds or lack of spare parts, which are typically not covered under traditional warranties. The AOM5000 contract is a long-term full service contract, which eliminates exclusions due to maintenance-based events, such as repair delays and spare parts. As such, the non-contractual availability has been reduced to 0.7%.
- **Long-term Availability Correlation with High Wind Events (LACHWE):** This factor accounts for the likelihood that the turbines will experience shutdowns more often in high winds than at other times, resulting in energy losses not accounted for by downtime alone. Shutdowns tend to occur in high winds because that is when turbine components are most likely to exceed limits specified in the control software. AWS Truepower's estimate of this loss, which depends upon the turbine type, expected downtime, and capacity factor, is based on detailed study of losses in operating wind projects. As the AOM5000 contract has a production-based availability guarantee, the LACHWE loss has been reduced to only account for the time-to-energy component of the remaining non-contractual availability.
- **Availability of Collection and Substation:** This loss accounts for outages of the collection system and substation. It is typically assigned a value of 0.2%, which corresponds to 2 events per year of 8 hours average duration.
- **Availability of Utility Grid:** This loss accounts for outages of the utility grid. It is typically assigned a value of 0.3%, which corresponds to 4 events per year of 6 hours average duration.
- **Plant Restart after Grid Outage:** This loss is typically assigned a value of 0.2%, which assumes that 4 utility grid outages per year are accompanied by a 5-hour average standby

13 Vestas. "VAWT_ Enel FSMA Ex. D Availability Covenants.DOCX."

period while the turbine components are brought within temperature, humidity, and other operating specifications.

- **First-Year Plant Availability:** This value is typically set to 4% to account for the additional turbine and plant downtime that is often observed during the first year of operation The First-Year Plant Availability has been reduced to reflect the production-based nature of the AOM5000 and the reduction in non-contractual availability.

Electrical

- **Electrical Efficiency:** Losses are experienced in all electrical components of the wind project, including the padmount transformer, electrical collection system, and substation transformer. These losses are established in the electrical system design. An electrical loss study[14] was provided for the proposed wind project. This study has been reviewed by AWS Truepower and the resulting electrical loss value has been increased from the AWS Truepower typical assumption of 2.0% to 2.5% based on additional transmission and step-up transformers required for project interconnection.
- **Power Consumption of Extreme Weather Package:** This loss is intended to account for the energy consumed by the equipment included in an extreme weather package, if the turbines are so equipped. Power consumption for site lighting, O&M facilities, and other site facilities not associated with the turbines are not included as loss items and should be considered in the project's financial modeling.

Turbine Performance

- **Sub-Optimal Operation:** This factor accounts for shortfalls from ideal performance due to suboptimal turbine settings. Typical examples include yaw misalignments, control anemometer calibration, blade pitch inaccuracies or misalignments, and other control setting issues. AWS Truepower was provided the Vestas AOM 5000 full-service contract with production based availability for the project. Based on the excerpts provided and understanding of the services from Vestas, the sub-optimal operation loss was reduced to 0.5%.
- **Power Curve Adjustment:** This loss accounts for expected turbine performance relative to the modeled performance using the advertised power curve.[15] Vestas supplied AWS Truepower with tabular, unfiltered power performance test results for turbines in similar site conditions[16,17]. The power performance test results were used in conjunction with the site specific climatic conditions and power frequency distribution to adjust the loss.
- **High Wind Control Hysteresis:** For most turbines, once the wind speed exceeds the turbine's design cut-out speed and the machine shuts down, the control software waits until the speed drops below a lower speed threshold (the reset-from-cut-out speed) before allowing the turbine to restart. This loss accounts for the energy lost in this hysteresis loop. It is calculated from wind data collected at the site and the manufacturer's specified cut-out and reset-from-cut-out speeds.

14 INTERCONNECTION OVERVIEW - COURTENAY 131127.pdf, 2014 January 21_Revision_ColorByFeeder.pdf

15 Dan Bernadett, et al., 2012 Backcast Study: A Review and Calibration of AWS Truepower's Energy Estimation Methods, AWS Truepower May 2012.

16 Vestas. "North American Power Performance Results for Active-Pitch Turbines." 130405dejae Vestas Active-Pitch Power Performance Summary.doc. 5 April 2013.

17 Vestas. Data. 130719dejae Vestas V90 and V100 PPPT Results__EXTERNAL.xlsx. 23 September 2013.

- **Inclined Flow:** This loss has been included to account for the estimated impact of inclined (non-horizontal) flow on power production.

Environmental

- **Icing:** This loss reflects decreased rotor aerodynamic efficiency caused by the accumulation of ice on the turbines during plant operation, as well as turbine shutdowns caused by excessive ice accumulation. The icing losses are estimated from site weather data, including the expected frequency and duration of freezing precipitation and rime ice formation.
- **Blade Degradation:** This loss reflects changes to the aerodynamic efficiency of the turbine blades over time and consists of long- and short-term components. Long-term impacts result from normal wear and are caused by factors such as the permanent effects of sun exposure, wind-blown sand, and the freeze/thaw cycle of moisture within micro-cracks on the blades. These factors typically affect the leading edge of the blade and result in performance degradation over time. Short-term effects generally result from the accretion of insects and dirt. This factor is estimated from the expected dust and insect accumulation in the area and the frequency of precipitation, which cleans the blades.
- **Low/High Temperature Shutdown:** This loss value is calculated based on the energy that will be lost when the turbine shuts down due to temperatures outside the operating design envelope.
- **Site Access:** Severe weather can limit access to some sites, which can reduce energy production because response times for repairs are increased. This situation often occurs in areas prone to heavy snow. However, offshore projects may also be strongly affected. This loss is estimated based on weather data and other site specific information.
- **Lightning:** Lightning can damage turbine components and cause electrical faults resulting in shutdowns. This loss is estimated from meteorological data indicating the likely frequency of lightning at the site.

Curtailments

Directional Curtailment: AWS Truepower has reviewed the Wind Power Plant Assessment (WPPA) for the Courtenay wind project which indicated that directional curtailment was not required for the layout in its current configuration when utilizing the Vestas V100-2.0 MW turbine model.

- **PPA Curtailment:** If the wind farm is forced to curtail production, loss of revenue could result from the sale of energy and or loss of production incentives. Typically, AWS Truepower does not have sufficient information to assign a value to this loss. Consequently, it is typically set to zero unless loss data is supplied by the client.
- **Environmental Curtailment:** If the wind farm is required to comply with certain operational standards due to environmental constraints, an environmental curtailment loss may be estimated. Production may be curtailed due to habitat concerns, noise restraints, shadow flicker, and other such environmental issues. Typically, AWS Truepower does not have sufficient information to assign a value to this loss. Consequently, it is normally set to zero unless specific restrictions are supplied by the client.

APPENDIX B – INDIVIDUAL UNCERTAINTY DESCRIPTIONS

- **Site Documentation and Verification**: This uncertainty addresses the quality and independence of the available information describing the site characteristics and monitoring equipment. Specific items considered include the quality and comprehensiveness of tower commissioning and verification documents; the quality and number of photographs depicting each mast and its surroundings; and information regarding obstacles potentially affecting the wind flow at each mast.

- **Wind Speed Measurements**: This is the uncertainty in anemometer readings of the free-stream wind speed. It reflects not just uncertainty in the sensitivity of the instruments when operating under wind-tunnel conditions, but also uncertainty in their performance in the field, where they may be subject to turbulent and off-horizontal winds, tower effects, and problems such as icing that may be missed in the validation. In addition, where applicable, the uncertainty in empirical adjustments applied to account for factors such as turbulence or the impact of wakes from existing turbines on observed wind speeds is considered.

- **Long-Term Average Speed**: This uncertainty addresses how accurately the site data, after the MCP adjustment, may represent the historical average wind resource. AWS Truepower has undertaken a study of wind speed interannual variability and has produced an interannual variability map using the global ERA-Interim reanalysis dataset.[18] The map suggests that the standard deviation of annual mean wind speeds for the Courtenay Project is about 3.1%. It is assumed that the annual mean varies randomly according to the normal distribution, and thus the error margin varies inversely with the square root of the number of years. The estimated uncertainty accounts also for the degree of correlation between the target and reference station, the length of the reference period of record, and the data recovery at each mast.

- **Evaluation Period Wind Resource**: This uncertainty is associated with how closely the wind resource over the evaluation period may match the long-term site average. The estimated value assumes a 10-year evaluation period, 3.1% interannual variation in the mean speed, and 0.5% uncertainty associated with possible climate oscillations and trends.

- **Wind Shear**: The wind shear uncertainty includes the uncertainty in the observed shear due to possible measurement errors and the uncertainty in the change in shear above mast height. The estimated value considers the site conditions, anemometer heights, hub height(s), and measurement uncertainties at each mast.

- **Wind Flow Modeling**: The uncertainty in the array-average free-stream wind speed at the turbines, relative to the masts, depends on the wind climate, terrain complexity and vegetation density and variation, characteristics of the wind flow model, and number of masts used to adjust the resource grid and their representativeness of the turbine layout.

- **Wind Speed Frequency Distribution**: Like the mean wind speed, the wind speed frequency distribution varies over time. Our research indicates that the interannual variability of the energy production directly related to the wind speed frequency distribution is typically about 1.4%. The estimated uncertainty in the long-term energy production estimate

18 Michael C. Brower, et al., "A Study of Wind Speed Variability Using Global Reanalysis Data", AWS Truepower, May 2013.

considers this factor along with the on-site period of record and the length of the evaluation period.

- **Plant Losses**: AWS Truepower has used operational data to quantify the uncertainties associated with our estimates for plant availability, electrical, and turbine performance losses for the evaluation period, as well as for the first year and any subsequent year. When these values are combined with the estimated uncertainties due to environmental factors and directional curtailment, the plant operational loss uncertainty is estimated to be 3.2% over the 10-year evaluation period. (Uncertainties associated with grid curtailment losses are not considered here.) In addition, based on the DAWM validation findings, we estimate the uncertainty in the wake loss calculations to be 20% of the total wake loss. The operational and wake loss uncertainties are combined as the square root of the sum of their squares.

STATE OF NORTH DAKOTA
BEFORE THE
PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR AN ADVANCE DETERMINATION OF PRUDENCE FOR THE 200 MW COURTENAY WIND FARM PROJECT

Case No. PU-15-_____

STATE OF MINNESOTA)
) ss
COUNTY OF HENNEPIN)

Paul B. Johnson, being first duly sworn on oath, deposes and says that he is the Director of Resource Planning and Bidding for Xcel Energy Services Inc., the service company subsidiary of Xcel Energy, in the above captioned matter, that he has read the testimony and schedules submitted in the above captioned matter under his name, that they were prepared under his direction, that he knows the contents thereof, and that the same is true and correct to the best of his knowledge and belief.

Paul B. Johnson

Subscribed and sworn to before me
this 5th day of May, 2015.

Notary Public
My Commission Expires: 1-31-2020

CYNTHIA D. HARRINGTON
Notary Public, State of Minnesota
My Commission Expires
January 31, 2020

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– PUBLIC DATA –

Direct Testimony and Schedules
Gregory L. Ford

Before the North Dakota Public Service Commission
State of North Dakota

IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR AN ADVANCE DETERMINATION OF PRUDENCE FOR THE 200 MW COURTENAY WIND FARM PROJECT

Case No. PU-15_____
Exhibit__ (GLF-1)

Transaction Testimony

May 6, 2015

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I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Gregory L. Ford. My business address is 414 Nicollet Mall, Minneapolis, Minnesota 55401.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Xcel Energy Services Inc., the service company subsidiary of Xcel Energy Inc., which is the registered public utility holding company parent of Northern States Power Company. I am Director of Engineering, Design and Document Services in the Energy Supply Engineering and Construction Department.

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I have worked in consulting and engineering management roles within the electric power industry for over 41 years. Since joining Xcel Energy in 2004, I have managed the Energy Supply Engineering and Design Departments for all Xcel Energy jurisdictions, as well as the bidding and negotiation of major equipment supply and installation contracts. My Statement of Qualifications is provided as Exhibit ___(GLF-1), Schedule 1.

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

A. The purpose of my testimony is to support the Company's application in this proceeding for an Advance Determination of Prudence (ADP) for the Company's proposed acquisition of the Courtenay Wind Farm project development (Courtenay Project). In particular, I describe the underlying

business transaction which will result in the Company purchasing the rights to complete the Courtenay Project.

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

A. My testimony covers the following topics:

- I describe the overall transaction and the Purchase and Sale Agreement (PSA) under which NSP purchases the Courtenay Project and its assets;
- I describe the Turbine Supply Agreement (TSA) and Service, Maintenance and Warranty Agreement (SMWA) that we entered into to purchase 100, 2 MW turbines for the Project from Vestas-American Wind Technology, Inc. (Vestas);
- I describe the balance of plant (BOP) construction contract we recently entered into with Wanzek Construction (Wanzek) based in Fargo, ND.
- I describe some of the key risks that Xcel Energy has identified in its investigation over whether to pursue acquiring this project. Those key risks include:
    - An ongoing default under the Courtenay Project's Generator Interconnection Agreement (GIA) with Otter Tail Power Company (OTP) and the Mid-Continent Independent System Operator, Inc. (MISO). As a result of the project's default under the GIA, there is a risk that the GIA could be terminated. I describe the efforts Xcel Energy has undertaken to assist Geronimo in curing that default;
    - In order to obtain firm transmission delivery service for the output of the Courtenay Project, it is necessary to obtain delivery over a

transmission line owned by Minnkota Power Cooperative (Minnkota). The project's ability to use Minnkota's line is the subject of a dispute at FERC which needs to be resolved satisfactorily in order for the transaction to go forward;

- In order for Xcel Energy to ensure that we qualify for the production tax credit (PTC) benefit from the Courtenay Project, it is necessary for the project to be in service by the end of 2016. My testimony describes the Company's plan to address that timing and ensure that the project meets a 2016 in-service date.

II. DESCRIPTION OF PROJECT

Q. PLEASE DESCRIBE THE COURTENAY PROJECT.

A. The Courtenay Project is a 200 MW nameplate capacity wind energy generation facility with an estimated average annual output of up to 807,813 megawatt hours (MWh) per year, assuming net capacity factor of approximately 46 percent, consistent with the wind study commissioned by the Company. That wind study is attached as Schedule 2 to the Direct Testimony of Company witness Mr. Paul B. Johnson. The Project site covers 24,900 acres of land in northeastern Stutsman County, along the edge of the Missouri Coteau in east-central North Dakota, northeast of Jamestown.

The Project will consist of 100-2 MW Vestas wind turbine generators, with associated facilities. The Vestas turbines were selected by Geronimo from the four turbine models under consideration as set forth in the project's certificate of site compatibility. The turbines will have a Supervisory Control and Data

Acquisition ("SCADA") system, which will allow for local and remote control monitoring of all turbines and will have lightning protection in accordance with the manufacturer's specifications. The type of foundation that will be used for the turbines will depend upon soil conditions at the site of each turbine. A plan for lighting and marking the turbines will be developed in accordance with FAA requirements.

The associated facilities for the Project include access roads, a collector substation, a 115 kV transmission line, an operations and maintenance (O&M) building, a permanent meteorological monitoring station, and a system of underground electrical collection lines and communication cables.

The Courtenay Project will interconnect to the OTP 345/115kV substation located north of Jamestown, North Dakota. The project will need to obtain firm point-to-point transmission service over facilities owned by Minnkota in order to deliver its output back to the Company.

Q. WHAT IS THE COURTENAY PROJECT'S CONSTRUCTION SCHEDULE?

A. The project construction is expected to begin in the Fall of 2015 with the construction of access roads to the individual turbine sites and pouring as many concrete turbine foundations as possible prior to the onset of winter. Engineering and procurement activities will begin earlier, shortly after receiving a Certificate of Public Convenience and Necessity (CPCN) from the Commission, which we have requested in Case No. PU-15-175, to accommodate the ordering of long lead time items. Wind turbine towers, nacelles, and blades will be delivered and erected in mid-2016. Commercial

operation could occur as early as September 2016, but in any event no later than December 31, 2016. This schedule is designed such that the Project will qualify for the federal PTC, which will provide cost benefits to our customers.

Q. WHAT IS THE EXPECTED COURTENAY PROJECT'S COST?

A. The total cost of construction of the Project is estimated to be approximately $300 million in capital costs, plus an allowance for funds used during construction (AFUDC) of about $12.5 million.

Q. PLEASE PROVIDE A HIGH-LEVEL BREAKDOWN OF THIS PROJECTED TOTAL CONSTRUCTION COST.

A. There are essentially seven categories of items making up this overall project cost:

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…TRADE SECRET ENDS]

III. DESCRIPTION OF TRANSACTION

Q. WHY IS NSP PURCHASING THE COURTENAY PROJECT?

A. The Direct Testimony of Ms. Laura McCarten provides a description of the reasons why the Company chose to purchase the Courtenay Project.

Q. OVERALL, HOW IS THE TRANSACTION STRUCTURED?

A. Our development of the Courtenay Project is structured around three key contracts. The first is the PSA between the Company and Courtenay Wind Holdings LLC (a subsidiary of Geronimo) for the purchase of Courtenay Wind Farm LLC, which is the corporate entity that holds the real estate rights, permits (including the Certificate of Site Compatibility), and contracts (such as the GIA) necessary for the development of the Courtenay Project. By purchasing this entity, the Company gains all of the rights, responsibilities and liabilities of Courtenay Wind Farm LLC which gives us the right to continue developing the project. The Company anticipates that once the transaction closes, we will dissolve the Courtenay Wind Holdings, LLC entity and merge all of its assets into NSP. From that point forward, the project development will be completed by NSP under its own name.

The second critical contract is the TSA for the fabrication, delivery, and commissioning of 100, 2 MW wind turbine generators and towers which will comprise the Courtenay Project. Along with the TSA, we have entered into the SMWA for a three-year maintenance and warranty program by the turbine manufacturer.

The third critical contract is the BOP contract with Wanzek, a North Dakota based contractor, for the design and construction of the Courtenay Project including erection of the towers and wind turbines. I will describe the TSA/SMWA and BOP contracts in greater detail in later sections of my testimony.

These contracts, coupled with the Company's oversight and construction efforts, provide the necessary components for our successful development of the Courtenay Project.

Q. PLEASE DESCRIBE THE TRANSACTION WHEREBY NSP IS PURCHASING THE MEMBERSHIP INTERESTS OF COURTENAY WIND FARM, LLC.

A. We have structured our purchase of the Courtenay Project from Geronimo as the purchase of 100 percent the membership interest of Courtenay Wind Farm LLC. Upon closing of the transaction, we plan to merge Courtenay Wind Farm LLC into the Company and continue development of the Courtenay Project as Northern States Power Company – Minnesota. The PSA calls for the Company to pay Geronimo **[TRADE SECRET BEGINS…**

…TRADE SECRET ENDS].

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

A. After reviewing several potential transaction structures, we determined that purchasing the entity is the most expeditious transaction structure available. Courtenay Wind Farm LLC holds hundreds of leases, permits and contracts that would be significantly time consuming to transfer individually to the Company. By purchasing the corporate entity that holds these assets and merging the LLC into the Company, the assets transfer to the Company by operation of law. We believe this will allows us to take control of all of the Courtenay Project assets more quickly than assigning these assets individually to the Company and seeking the myriad third-party consents required to do so. This is consistent with how we structured the purchases of the Border Winds Project and Pleasant Valley Project with RES Americas. The main difference is that instead of purchasing an operating wind farm, we will be purchasing the assets necessary to construct, own and operate a wind farm.

Q. YOU MENTIONED THAT THE MEMBERSHIP INTERESTS OF THE ENTITY TRANSFER TO NSP UPON "CLOSING" OF THE TRANSACTION. WHEN IS THAT?

A. The PSA was executed on April 29, 2015. We anticipate that closing of the transaction should occur within 30 to 60 days after the PSA was executed. Generally, I would expect the closing to occur sometime in June, which is before the Company expects to receive final Commission approval for the transaction.

Q. PLEASE DESCRIBE THE ITEMS THAT MUST BE COMPLETED AS A CONDITION TO CLOSING THE PSA.

A. The PSA contains several conditions precedent to closing the transaction, meaning that each provision must be satisfied before we will actually acquire the membership interests of Courtenay Wind Farm LLC and merge it into the Company. These conditions are generally those items that must be achieved in order for the transaction to be viable. The conditions to closing and the efforts being taken to resolve them are:

- *Applicability of ND Code § 49-05-06.* We must receive a determination from the Commission that ND Code § 49-05-06 is not applicable to the Courtenay Project as a condition to closing. On April 29, 2015 the Company requested a jurisdictional determination from the Commission in Case No. PU-15-173.

- *Viability of the GIA.* In my introduction I mentioned that the GIA is in default and MISO had requested permission to terminate it. For purposes of the PSA, FERC must confirm the GIA remains in effect for the Courtenay Project in order for us to close. If FERC accepts MISO's proposed termination of the GIA, then the PSA will not close and the transaction will not occur. I note that on May 4, 2015 MISO made a filing with FERC requesting to withdraw its request to terminate the GIA because the default under the GIA had been cured. Assuming FERC accepts MISO's request to withdraw, we believe this issue should be resolved. We expect an outcome from FERC by approximately May 24, 2015.

- *Satisfactory Terms to Deliver Project Output over Minnkota's Facilities.* The issue with respect to Minnkota tariff provisions that I mentioned in my introduction must be resolved to the Company's satisfaction. Xcel Energy is currently in discussions with Minnkota, MISO, and Geronimo to resolve this matter.

- *Mitigation of Issues Identified in Due Diligence.* Geronimo must use commercially reasonable efforts to cure any issues we have identified during our due diligence investigation which includes certain real estate and permitting issues.

- *Other conditions which are customary in commercial transactions of this type.* The PSA contains a series of additional conditions to closing that are common in purchase transactions of this type, including confirmation that all representations and warranties remain true, no government action or litigation has been commenced that calls the transaction into question, the parties are in material compliance with the terms of the PSA, no unusual liens have been levied against the project, and the Courtenay Project entity remains in good standing.

Q. WHY IS THE COMPANY PURCHASING THE COURTENAY PROJECT ENTITY PRIOR TO RECEIVING COMMISSION APPROVAL?

A. In order to maximize the chances of completing project development and construction by the end of 2016 to capture the PTCs, the Company determined that it needed to expedite the purchase to allow design and early

procurement of materials to be completed and allow on-site construction to begin immediately after regulatory approval is received.

Given the distressed nature of the Courtenay Project and Geronimo's significant investment to date, we became concerned that it was important for Xcel Energy to step in as promptly as possible to ensure the ongoing viability of the project.

Q. WHAT HAPPENS IF REGULATORY APPROVALS ARE NOT RECEIVED?

A. The PSA has mechanisms that provide Geronimo with an option to acquire the project at our then-incurred cost in the event we abandon the project or to unwind the transaction in the event we are unable to obtain all necessary regulatory approvals. Further, the payments referenced above do not occur prior to regulatory approval. In addition both the TSA and BOP contracts are structured in a way that allow us to minimize our exposure prior to anticipated regulatory approvals so that if those approvals are not forthcoming we can cancel the project with minimum financial exposure.

Q. WHAT OBLIGATIONS DOES GERONIMO HAVE BETWEEN SIGNING THE PSA AND CLOSING THE TRANSACTION?

A. For the period of time leading up to the closing, Geronimo and its affiliates have the obligation to assist the Company to achieve successful closing. That obligation is at Geronimo's sole cost. We anticipate good cooperation on this because it is in Geronimo's interest that the transaction achieving closing in order to receive payments.

Q. WHAT HAPPENS BETWEEN CLOSING THE TRANSACTION AND RECEIPT OF FINAL REGULATORY APPROVALS?

A. The Company has the obligation to seek regulatory approvals from both the Commission and the Minnesota Public Utilities Commission (MPUC). Geronimo and its affiliates must make themselves available to us to keep working on the project to complete necessary activities. Geronimo is to track its time but has committed to provide us with up to **[TRADE SECRET BEGINS…**

…TRADE SECRET ENDS].

Q. WHAT ARE THE COMPANY'S RIGHTS AND OBLIGATIONS FOR BREACHES OF THE PSA AND FOR INDEMNIFICATION OF THIRD PARTY CLAIMS?

A. The PSA contains typical default, remedies and indemnification provisions. Specifically, the Seller agrees to indemnify NSP for any third-party claims that exceed **[TRADE SECRET BEGINS…**

…TRADE SECRET ENDS].

The PSA contains limitations of liability that generally exclude consequential and other special damages.

IV. THE TSA/SMWA

Q. WHAT IS THE TSA?

A. The TSA is the contract we have with Vestas for the purchase of 100 2 MW nameplate rated wind turbine generators and associated equipment.

Q. WHAT IS THE PRICE PAID TO VESTAS UNDER THE TSA?

A. The overall contract is at a fixed price of **[TRADE SECRET BEGINS… …TRADE SECRET ENDS]**. Purchase of the wind turbine generators is the single largest cost component for a wind generation project.

Q. WHAT IS THE SMWA?

A. It is the service, maintenance and warranty agreement with Vestas that obligates Vestas to perform warranty work and scheduled maintenance on the wind turbine generators for three years after commissioning.

Q. WHAT IS THE PRICE OF THE SMWA?

A. **[TRADE SECRET BEGINS… …TRADE SECRET ENDS]**. This is not a capital cost but rather is classified as an Operations and Maintenance cost over the first three years of facility operation for ongoing maintenance of the project.

Q. WHY DID THE COMPANY CHOOSE TO CONTRACT WITH VESTAS FOR MAINTENANCE AND WARRANTY WORK?

A. In our experience, it is generally more efficient to utilize the turbine manufacturer for warranty and maintenance work during the initial operation

of the wind farm. By using the manufacturer, we minimize the risk of claims of inadequate maintenance or misuse of the equipment. We also generally find that by contracting with the manufacturer for maintenance services, it puts downward pressure on the turbine price and we end up with an overall better deal.

Q. WHY IS NSP ENTERING INTO THE TSA/SMWA DIRECTLY RATHER THAN THROUGH COURTENAY WIND FARM, LLC?

A. It was overall more efficient for us to contract directly with Vestas. Since Xcel Energy is ultimately responsible for the construction, ownership and operation of the Courtenay Project, we determined it was appropriate to negotiate the wind turbine generator purchase directly. In any event, Geronimo had advised us that they lacked the financial wherewithal to contract directly with the turbine manufacturer.

V. THE BOP CONTRACT

Q. WHAT IS THE BOP CONTRACT?

A. This is our contract with Wanzek, based in Fargo, North Dakota for the engineering, procurement and construction of the balance of plant aspects of the wind farm. The BOP Contract also calls upon Wanzek to install the 100, 2 MW turbines we procured directly under the TSA along with all of the balance of plant facilities.

Q. WHAT IS THE PRICE PAID TO WANZEK UNDER THE BOP CONTRACT?

A. It is approximately **[TRADE SECRET BEGINS… …TRADE**

SECRET ENDS] based on the scope of work and schedule assumed in the contract. There is a possibility that the cost could go up somewhat if additional identified construction work is completed by Wanzek or if Wanzek encounters delays or unforeseen circumstances in their construction program. For example, if Wanzek is unable to pour at least some of the turbine foundations in 2015 (prior to the winter freeze up), it would have to expedite its work next Spring that would raise the overall project costs.

Q. HOW MANY CONSTRUCTION WORKERS WILL BE USED TO CONSTRUCT THE COURTENAY PROJECT

A. The construction work force is expected to peak at between 250 and 300 in 2016. It is estimated the 40 to 50% would be North Dakota residents and approximately 10% would be local hires (within 50-mile radius).

Q. WHAT IS THE PROPOSED TIMING OF THE WORK AND CONSEQUENCES FOR DELAY?

A. As with the TSA, the work under the BOP Contract is time-sensitive. We are mindful that all of our work needs to be completed to allow the Courtenay Project to be commissioned by the end of 2016 in order to ensure qualification for the federal production tax credit. Site construction work will begin immediately after regulatory approval is received. Cold weather will require that site construction be halted for several months over the winter. Construction will resume in the Spring of 2016. Turbines will be delivered and erected throughout the Summer of 2016 and commissioned during the Fall. The entire project is expected to be in-service in the late Fall of 2016.

VI. RISK DISCUSSION

Q. WHAT ARE THE MATERIAL RISKS YOU HAVE IDENTIFIED RELATING TO THE IMPLEMENTATION OF THE COURTENAY PROJECT?

A. I believe there are four material risks that the Company needs to manage in deploying this project. They are:

- The ongoing viability of the Interconnection Agreement and satisfactory resolution of MISO's request to terminate that contract;
- Satisfactory resolution of the transmission delivery issue with Minnkota;
- Construction timing risk; and
- Construction cost risk.

I believe that the Company has a plan in place to address each of these risks.

Q. WHAT HAS THE COMPANY DONE TO MITIGATE THE INTERCONNECTION AGREEMENT RISK?

A. In the PSA, satisfactory resolution of the Interconnection Agreement issue is a condition precedent to Closing the transaction. As I mentioned, MISO made a filing with FERC in Docket No. ER-15-1363-00 seeking FERC's permission to terminate the GIA as a result of Geronimo's default by not meeting the required milestones under the GIA. The Company has offered to cure the default under the GIA and to take those steps necessary to satisfy the applicable milestones. We have been working constructively with OTP (the interconnecting utility) to address Geronimo's prior performance deficiencies. While it will ultimately be up to FERC to decide whether our proposed cure is

sufficient to avoid termination of the Interconnection Agreement, we are optimistic that FERC will allow the Interconnection Agreement to continue.

Q. WHEN DO YOU EXPECT TO RECEIVE AN OUTCOME OF THE INTERCONNECTION AGREEMENT ISSUE?

A. We expect FERC will issue an order in this matter on or about May 24, 2015. As I mentioned in my introduction, we are pleased to report that MISO has accepted the cure and on May 4, 2015, filed a motion with FERC seeking to withdraw its request for termination. Assuming FERC grants MISO's request to withdraw, it should resolve the issue.

Q. WHAT HAS THE COMPANY DONE TO MITIGATE THE MINNKOTA RISK?

A. In the PSA, satisfactory resolution of the Minnkota issue is a condition precedent to Closing the transaction. **[TRADE SECRET BEGINS…**

…TRADE SECRET ENDS].

Q. WHAT HAS THE COMPANY DONE TO MITIGATE THIS RISK?

A. The Company intervened in the FERC proceeding on this issue. Further, we have worked closely with Geronimo in reviewing the settlement discussions they have been having with Minnkota. The Company is optimistic that a settlement agreement should be completed that satisfies the requirements in the PSA.

Q. PLEASE DESCRIBE THE CONSTRUCTION TIMING RISK.

A. This issue has two aspects. First, it is important that construction be completed on a schedule that ensures we qualify for the PTC benefit. To maximize our chances, the wind farm needs to be in service by the end of 2016 to ensure qualification. Second, our construction schedule assumes that we can begin to do site preparation work in 2015, including pouring at least some of the concrete tower foundations for the turbines. This work sequencing both maximizes the likelihood of timely completion and also provides a more efficient and lower-cost deployment schedule.

If we are unable to commence significant activities in 2015, it will require all work be done in 2016, after the spring thaw and road restrictions have been lifted. This will compress our construction schedule significantly. While we believe that we can still successfully complete the construction effort in 2016, such a schedule would increase the risk of completion.

Q. HAS THE COMPANY TAKEN ANY STEPS TO ADDRESS DELAY BEYOND 2016?

A. Yes. In our due diligence review of the project we determined that the Courtenay Project has a good faith basis to claim that it has been under continuous development throughout the project life. Under the IRS guidance this means that the project could qualify for PTCs even if our deployment is delayed. While we prefer not to rely on this path, it does provide us some comfort if unforeseen circumstances delay deployment of the construction.

Q. PLEASE DESCRIBE THE CONSTRUCTION COST RISK.

A. With any major construction project there is the risk that costs could increase over what has been projected. Our analysis and budgeting for the project has taken this risk into account.

Q. WHAT HAVE YOU DONE TO MITIGATE THE CONSTRUCTION COST INCREASE RISK?

A. The single largest cost component of the project is the purchase of the wind turbines under the TSA. That cost represents a substantial majority of the overall cost of the project. This is a fixed price contract with little potential for change orders or other cost increases. As a result, we believe that this cost aspect should not be subject to cost increase pressure.

Likewise our purchase price from Geronimo under the PSA is a fixed amount that is not subject to change orders or cost increases. While there is a modest potential that we could incur some downstream consulting fees from Geronimo, any such amount would be minor and would not materially change the overall cost profile.

The Wanzek BOP Contract could potentially increase depending upon the circumstances. Most notably, if we have weather or other delays in our construction schedule, it could result in an increase in the construction costs. We also note that some of the other costs identified for this project are not under fixed price contracts and could be subject to some increase. However, our cost estimate includes a modest contingency that would reflect the potential construction cost increases.

Q. IS THE COMPANY CONFIDENT THAT IT CAN DEPLOY THE COURTENAY PROJECT FOR A TOTAL PRICE IN THE RANGE PROVIDED, INCLUDING CONSIDERATION OF THESE RISKS?

A. Yes.

VII. CONCLUSION

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

A. Yes, it does.

Gregory L. Ford

Statement of Qualification

I am the Director of Engineering & Design Services in the Engineering & Construction Department. I have worked in the consulting and owners engineering management role within the electric power industry for over 41 years. The experience has been with Gilbert/Commonwealth Associates, Inc. in Jackson, MI for 11 years; HDR Engineering, Inc. in Minneapolis, MN for 13 years; and NRG Energy, Inc. in Minneapolis, MN for 7 years prior to joining Xcel Energy in 2004. Project experience has ranged from initial development through acceptance testing on both new and retrofitted projects and has included significant involvement in permitting activities. Technologies have included boilers (stoker, fluid bed, gas, oil, municipal solid waste, and pulverized coal); steam turbines (10 to 1200 MW); combustion turbines (4 to 240 MW) in both simple and combined cycle configurations; low and high head hydro; district heating and cooling; control systems; ash handling and disposal; coal handling; cooling water systems; environmental retrofits including fabric filters, precipitators, SCRs, low NOx burners, and fuel switching to PRB coal; wind and solar renewables, and overall Balance of Plant systems and equipment.

I was the Power and Energy, as well as Environmental Section Manager for the Minneapolis office while at HDR Engineering and was the Executive Director of Engineering while at NRG Energy. NRG management responsibilities included bidding and negotiating major contracts for new and retrofitted projects domestically and internationally with construction budgets up to $1.0 billion.

While at Xcel Energy, I have been responsible for managing the bidding and negotiation of the major equipment supply and furnish and installation contracts for the Comanche 3 project near Pueblo, Colorado; the project development of the Fort St. Vrain Units 5 and 6 project near Platteville, Colorado; the Cameo Solar

Thermal Demonstration Project; and the Clean Air Clean Jobs projects that include Cherokee Synchronous Condenser, Cherokee Units 5, 6, and 7 Combined Cycle, Pawnee AQCS, and Hayden Units 1 and 2 SCR projects. I have also been responsible for the management and administration of the Engineering and Design Departments within Engineering & Construction for all jurisdictions of Xcel Energy.

I am a registered Professional Engineer in Michigan and Minnesota. I am also a member of ASME. I have a BSME degree from Colorado State University.

STATE OF NORTH DAKOTA
BEFORE THE
PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF
NORTHERN STATES POWER COMPANY
FOR AN ADVANCE DETERMINATION OF
PRUDENCE FOR THE 200 MW
COURTENAY WIND FARM PROJECT

Case No. PU-15-_____

STATE OF MINNESOTA)
) ss
COUNTY OF HENNEPIN)

Gregory L. Ford, being first duly sworn on oath, deposes and says that he is the Director of Engineering, Design and Document Services for Xcel Energy Services Inc., the service company subsidiary of Xcel Energy, in the above captioned matter, that he has read the testimony and schedules submitted in the above captioned matter under his name, that they were prepared under his direction, that he knows the contents thereof, and that the same is true and correct to the best of his knowledge and belief.

Gregory L. Ford
Gregory L. Ford

Subscribed and sworn to before me
this 5 th day of May, 2015.

JoAnne Marie McNabb
Notary Public
My Commission Expires: 2019

JOANNE MARIE MCNABB
NOTARY PUBLIC
MINNESOTA
My Commission Expires Jan. 31, 2019

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– PUBLIC DATA –

Direct Testimony and Schedules
Elizabeth M. Engelking

Before the North Dakota Public Service Commission
State of North Dakota

IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR AN ADVANCE DETERMINATION OF PRUDENCE FOR THE 200 MW COURTENAY WIND FARM PROJECT

Case No. PU-15_____
Exhibit__ (EME-1)

Geronimo Testimony

May 6, 2015

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I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND OCCUPATION.

A. My name is Elizabeth M. Engelking. I am Vice President for Strategy and Policy Geronimo Energy, LLC (Geronimo).

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I received my MBA in finance and economics from the Carlson School of Management at the University of Minnesota in 1986. From 1988-1998, I was employed as a rates analyst with the Minnesota Public Utilities Commission, where I oversaw the implementation of integrated resource planning. In 1998, I joined Great River Energy, where I worked as a transmission analyst and as Manager of Resource Planning. From 2004-2011, I was employed by Xcel Energy in the Resource Planning department.

I joined Geronimo in January, 2012, and currently serve as Vice President for Strategy and Policy. My responsibilities include oversight over regulatory and legislative issues related to Geronimo's energy projects, as well as contributions to the commercial sales of our projects. Specifically, I have been actively involved in the development and sales efforts of the 200 MW Courtenay Wind Farm, LLC development project (Courtenay Project). My resume is included as Exhibit ___ (EME-1), Schedule 1.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A. I am testifying at the request of and on behalf of the Applicant, Northern States Power Company, d/b/a Xcel Energy (referred to herein as Xcel Energy

or NSP). I provide context for the underlying business transaction in which Xcel Energy is purchasing the Courtenay Project from Geronimo. Through this testimony, Geronimo supports Xcel Energy's request for an Advance Determination of Prudence (ADP) for its acquisition of the Courtenay Project.

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

A. I provide Geronimo's perspective on the status of the Courtenay Project and why it decided to sell the Courtenay Project to Xcel Energy.

II. TRANSACTION

Q. PLEASE SUMMARIZE THE CURRENT STATUS OF THE COURTENAY PROJECT?

A. The Courtenay Project is a proposed 200 MW wind farm development to be located in Stutsman County, North Dakota. It is proposed to interconnect to Ottertail Power Company's electric system. The development of the project is well advanced and Geronimo has obtained substantially all land rights, state and local permitting and contractual rights necessary to support completion of the project. The Courtenay Project is positioned well to achieve commercial operation by the end of 2016 and as such should qualify for federal production tax credits (PTCs).

In 2013, Xcel Energy entered into a Power Purchase Agreement (PPA) with Courtenay Wind Farm, LLC for the purchase of the output from the Courtenay Project. The PPA was the subject of a prior ADP application (Case No. 13-706) which was approved on February 26, 2014.

Pricing under the PPA included a significant assumption that is relevant to Geronimo's desire to sell the Courtenay Project. When Geronimo entered into the PPA, we assumed that the Courtenay Project would achieve commercial operation by the end of 2014, and, would be eligible to capture certain North Dakota tax credits. The assumption that those North Dakota tax credits would be available to Geronimo and Geronimo would be able to monetize such credits prompted us to offer Xcel Energy a lower PPA price than we otherwise would have done.

Since Geronimo could not utilize the North Dakota tax credit, the PPA is substantially underpriced.

Q. WHAT ARE THE IMPLICATIONS OF THE PPA BEING UNDERPRICED?

A. It means that the revenue stream under the PPA is insufficient to support completion of the Courtenay Project and provide a reasonable return on the investment to attract equity investor participation in the wind generation industry.

Q. DID GERONIMO PROBE THE MARKET TO DETERMINE WHETHER IT COULD ATTRACT EQUITY INVESTMENT IN THE COURTENAY PROJECT UNDER THE EXISTING PPA?

A. Yes. Geronimo has successfully developed a number of projects throughout the upper-Midwest by obtaining equity investment from various sources. We have had a number of strategic partnerships in the industry and have found this to be a reasonable way for Geronimo to obtain the investment necessary to complete projects in an efficient and timely manner.

Using our network of contacts in the industry, Geronimo aggressively marketed the Courtenay Project. Those efforts were all unsuccessful based in part, due to the PPA pricing being insufficient to support further development, construction and financing of the project. Geronimo was advised by some of these entities that, while the Courtenay Project was viewed as a viable development project, the projected revenue under the PPA was insufficient to justify an investment.

Q. IS IT TRUE THAT THE NORTH DAKOTA INCOME TAX CREDIT FOR WIND ENERGY DEVICES WAS RENEWED DURING THE 2015 LEGISLATIVE SESSION?

A. A version of the credit recently became law. However, it is my understanding that the parameters of the credit substantially favors North Dakota taxpayers and makes it difficult or impossible for a non-North Dakota equity investor to take advantage of the credit. As a result, it does not appear that the new North Dakota law would help Geronimo's efforts to market the project to the wind-energy equity community.

Q. WHAT IS THE STATUS OF THE PPA?

A. Courtenay Wind Farm, LLC (the "Seller" under the PPA) is in default of the PPA for its failure to meet critical project milestones and make further payments for Delay Damages that have accrued as a result of its defaults.

Q. IS COURTENAY WIND FARM, LLC IN DEFAULT OF OTHER MAJOR CONTRACTS RELATING TO THE PROJECT?

A. Yes. Courtenay Wind Farm, LLC entered into a Generator Interconnection Agreement (GIA) with Ottertail Power Company (Ottertail) and the Mid-Continent Independent System Operator, Inc. (MISO). Courtenay Wind

Farm, LLC is in default of the GIA for failure to meet material milestones under the GIA. MISO has filed a request with the Federal Energy Regulatory Commission (FERC) seeking the right to terminate the GIA due to those defaults.

Q. DOES COURTENAY WIND FARM, LLC HAVE THE FINANCIAL WHEREWITHAL TO CURE THE DEFAULTS UNDER THE GIA?

A. No.

Q. HAS GERONIMO REQUESTED THAT XCEL ENERGY ASSIST IT IN CURING THE DEFAULTS UNDER THE GIA?

A. Yes. At Geronimo's request, Xcel Energy has been working with Ottertail and MISO in an effort to cure the GIA default. It is my understanding that FERC will determine whether the proposed cure is sufficient and that FERC's decision should be forthcoming by approximately May 24, 2015. I note that FERC accepting the cure to the GIA default is a fundamental condition to the transaction moving forward and if FERC terminates the GIA, Xcel Energy will not be obligated to proceed with the transaction further.

We have recently learned that Xcel Energy and Ottertail came to an agreement on a cure for Geronimo's defaults under the GIA. As a result, MISO has agreed to withdraw its request for termination of the GIA. We expect that withdrawal to occur soon.

Q. WHY DID GERONIMO REQUEST THAT XCEL ENERGY PURCHASE THE COURTENAY PROJECT?

A. We felt that Xcel Energy was the logical buyer under the circumstances. Xcel Energy is already the off-taker from the PPA and has included this increment of generation in its resource plans. Xcel Energy has a substantial presence in North Dakota and has stated an interest in diversifying the geographic footprint of its supply portfolio. Xcel Energy has been working with us to cure the GIA default and has shown a substantial interest in preserving the Courtenay Project as a resource on its system. And Xcel Energy has the financial wherewithal to successfully complete the Courtenay Project, despite the difficulties the project has encountered.

Q. WHAT IS THE PURCHASE PRICE THAT XCEL ENERGY IS PAYING GERONIMO FOR THE COURTENAY PROJECT?

A. **[TRADE SECRET BEGINS…**

… END TRADE SECRET].

Q. HOW WAS THIS PURCHASE PRICE DEVELOPED?

A. The purchase price represents a substantial proportion of Geronimo's out-of-pocket, third-party costs incurred in the development of the Courtenay Project, such as costs of land acquisition, permitting, purchase of long-lead-time equipment (such as transformers), and the like.

Q. DOES THE PURCHASE PRICE CONTAIN ANY ACQUISITION PREMIUM OR PROFIT FOR GERONIMO?

A. No. Xcel Energy refused to pay any premium. In fact, the purchase price is actually at a discount from Geronimo's actual costs attributable to the project.

Q. PLEASE BRIEFLY DESCRIBE THE TRANSACTION STRUCTURE.

A. Xcel Energy is purchasing the Courtenay Wind Farm, LLC entity, which means that Xcel Energy will become the owner of that company and all of its assets, rights and liabilities. The acquisition is subject to a number of closing conditions that must be satisfied prior to Xcel Energy taking over the entity. When the transaction closes (anticipated to be in about 30 days) Xcel Energy will then be free to complete development of the project in its own right, either through the Courtenay Wind Farm, LLC or directly through NSP. Geronimo has agreed to remain available to provide assistance in completing the development.

III. CONCLUSION

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

A. Yes, it does.

Resume of Elizabeth M. Engelking
Geronimo Energy
7650 Edinborough Way, Suite 725
Edina, Minnesota 55435

EDUCATION

Master of Business Administration, Carlson School of Management
University of Minnesota, 1986

Bachelor of Sciences
College of William and Mary in Virginia, 1982

CURRENT RESPONSIBILITIES

Leads Geronimo's Regulatory and Legislative efforts, and contributes to its commercial strategy. Prior to 2015, led the Geronimo Development team, which is responsible for creating new renewable projects and moving them through all phases of development to construction-ready status. Also lead Geronimo's Regulatory and Legislative efforts, and contributes to its commercial strategy.

EMPLOYMENT

Geronimo Energy January 2012 – Present	 Vice President
Xcel Energy October 2008 – January 2012 2004 – October 2008	 Director, Resource Planning and Bidding Manager, Resource Planning and Bidding
Great River Energy 2000 – 2004 1998 – 2000	 Manager, Resource Planning Transmission Analyst
Minnesota Public Utilities Commission 1988-1998	 Public Utilities Rates Analyst

STATE OF NORTH DAKOTA
BEFORE THE
PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR AN ADVANCE DETERMINATION OF PRUDENCE FOR THE 200 MW COURTENAY WIND FARM PROJECT

Case No. PU-15-_____

STATE OF MINNESOTA)
) ss
COUNTY OF HENNEPIN)

Elizabeth M. Engelking, being first duly sworn on oath, deposes and says that she is the Vice President for Development at Geronimo Wind Energy, LLC, that she has read the testimony and schedules submitted in the above captioned matter under her name, that they were prepared under her direction, that she knows the contents thereof, and that the same is true and correct to the best of her knowledge and belief.

Elizabeth M. Engelking

Subscribed and sworn to before me
this 5 th day of May, 2015.

Notary Public
My Commission Expires: January 31, 2019

Laci Jewell Thweatt
NOTARY PUBLIC
MINNESOTA
My Commission Expires 01/31/2019