

**PUBLIC DOCUMENT  
NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

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

NORTHERN STATES POWER COMPANY  
ADVANCE DETERMINATION OF PRUDENCE –  
REPOWERED WIND PORTFOLIO

CASE NO. PU-20-\_\_\_\_\_

**APPLICATION FOR  
ADVANCE DETERMINATION OF PRUDENCE**

**I. INTRODUCTION**

Northern States Power Company, doing business as Xcel Energy (Xcel Energy or NSP or the Company), submits to the North Dakota Public Service Commission (Commission) this Application for an Advance Determination of Prudence (ADP) for acquisition of repowered wind generation. Specifically, the Company is requesting that the Commission grant ADPs for repowering projects at four Company-owned wind generation facilities: Border Winds, a 150 MW facility in Rolette County, North Dakota; Grand Meadows Wind, a 100.5 MW facility in Mower County, Minnesota; Nobles Wind, a 201 MW facility in Nobles County, Minnesota; and Pleasant Valley Wind, a 200 MW facility in Mower County, Minnesota. We expect that these repowering projects (along with three additional, smaller PPA repowering projects) will result in \$163 million in cost savings on a present value of revenue requirements (PVRR) basis to customers over their life for the entire NSP System.

On July 27, 2020, the Company issued a solicitation to explore opportunities to repower existing wind projects in our resource portfolio, because we believed that older projects in our fleet might yield long-term cost savings. The result of that solicitation was that the Company selected all of the projects proposed in response to the solicitation that yielded cost savings. In addition to the Company-owned rebuild projects, we have preliminarily chosen three smaller projects to be rebuilt and continue selling energy to the Company through long-term power purchase agreements (PPAs). Those PPA projects are: Ewington Wind, a 20 MW project in Jackson County, Minnesota, West Ridge Wind, a 9.5 MW facility in Pipestone County, Minnesota, and McNeilus Wind, a 37.5 MW project in Dodge County, Minnesota. These three PPA rebuild projects are

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

all under 50 MW and are not, therefore, subjects of this application.<sup>1</sup> However, they arose out of the same planning and procurement process, and are included in the modelling of the overall portfolio (Wind Repower Portfolio). The Company is prepared to proceed with its Company-owned repowering projects and is currently negotiating PPAs for the other projects. Table 1 identifies the projects in the Wind Repower Portfolio that are the subject of this application. .

**Table 1: Projects that are the Subject of this Application**

<b>Wind Project</b>	<b>Type</b>	<b>Net Capability (MW)</b>	<b>Location</b>	<b>Savings* \$M [TRADE SECRET DATA BEGINS</b>
Border Winds	Co. owned	150	Rolette County, ND	
Grand Meadows	Co. owned	100.5	Mower County, MN	
Nobles	Co. owned	201	Nobles County, MN	
Pleasant Valley	Co. owned	200	Mower County, MN	<b>TRADE SECRET DATA ENDS]</b>
<b>Total</b>				<b>(\$138)</b>

\* Based on a “Pro Forma” analysis

In addition to providing cost savings, the proposed repowering projects will benefit local economies. If approved, we expect our proposed portfolio of Company-owned repowering projects would create approximately 650 well-paying jobs across the 2021-2024 time period, including 150 at Border Winds in Rolette County, North Dakota. The Company-owned projects would contribute an estimated \$5 million directly to local economies through landowner lease payments, and an additional over \$3.3 million in

---

<sup>1</sup> *N. States Power Co. Elec. Rate Increase Application*, Case No. PU-07-776, ORDER ADOPTING SETTLEMENT AGREEMENT at 6 of attached Settlement Agreement (Dec. 31, 2008) (noting that the Company will file for an ADP for any resource addition of at least 50 MW if the Company proposes to allocate all or part of the costs to North Dakota).

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

property tax revenues. Of that total \$8.3 million in estimated lease payments and tax revenue, approximately \$1.4 million is associated with the proposed repowering of the Border Winds facility in North Dakota. We believe that supporting these local economic benefits provides value to our communities during the COVID-19 pandemic. Notably, North Dakota's share of the economic and employment benefits from this Wind Repower Portfolio is proportionally greater than its share of the overall NSP System.

In support of the Company's Application, Xcel Energy provides the following Direct Testimony:

- Policy Testimony – Mr. Christopher J. Shaw
- Resource Planning Testimony – Ms. Farah L. Mandich

The remainder of this Application addresses the following:

- Description of Applicant;
- Communication and Service;
- Standard of Review;
- Authority for Relief Requested;
- Description and Purpose of Filing;
- Economic Analysis;
- Prudence of the Repowering Projects; and
- Conclusion.

## **II. COMPLIANCE MATTERS**

### **B. Description of 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 (N.D.C.C.). The name and address of Xcel Energy is:

Northern States Power Company, a Minnesota corporation  
414 Nicollet Mall  
Minneapolis, Minnesota 55401

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

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

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 12, 2018, and are incorporated herein by reference.

Xcel Energy has service territory in five upper Midwest states including North Dakota. The Company presently serves approximately 94,000 retail electric customers in and around Fargo, Grand Forks, and Minot, North Dakota, and owns approximately 1,450 conductor miles of transmission and 3,810 conductor miles of electric distribution lines in North Dakota.

**C. Communication and Service**

The Company respectfully requests 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, North Dakota 58102  
[dave.sederquist@xcelenergy.com](mailto:dave.sederquist@xcelenergy.com)

Regulatory Records  
Records Specialist  
Xcel Energy  
414 Nicollet Mall  
Minneapolis, Minnesota 55401  
[regulatory.records@xcelenergy.com](mailto:regulatory.records@xcelenergy.com)

**D. Standard of Review**

North Dakota Century Code section 49-05-16(1)(d) authorizes the Commission to issue an ADP if it "determines that the resource addition is prudent." This standard is similar to the "honestly and prudently invested" standard that the Commission uses for ratemaking.<sup>2</sup> The general prudence standard calls for determining whether the utility

---

<sup>2</sup> See N.D.C.C. § 49-06-02.

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

action was reasonable at the time it was taken under all relevant circumstances.<sup>3</sup> 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.

North Dakota Century Code section 49-05-16(7) further provides that there “is a rebuttable presumption that a resource addition located in the state is prudent.”

**E. Authority for Relief Requested**

North Dakota Century Code section 49-05-16 allows for a public utility to seek an ADP from the Commission at the utility’s discretion. Pursuant to the Settlement Agreement in Case No. PU-07-776, the Company is obligated to file an application for an ADP for its acquisition of generating resources above 50 MW.<sup>4</sup> Xcel Energy has committed to filing its ADP applications within fourteen days of seeking similar approvals from the Minnesota Public Utilities Commission (MPUC).

With this Application, the Company has met its filing obligations. This Application complies with the requirements of N.D.C.C. § 49-05-16 and the Settlement Agreements in Case Nos. PU-07-776 and PU-12-813. Additionally, the Company is submitting this Application within fourteen days of the September 29, 2020 filing of a similar application with the MPUC.

---

<sup>3</sup> 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).

<sup>4</sup> *N. States Power Co. Elec. Rate Increase Application*, Case No. PU-07-776, ORDER ADOPTING SETTLEMENT AGREEMENT at 6 of attached Settlement Agreement (Dec. 31, 2008).

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

**III. DESCRIPTION AND PURPOSE OF FILING**

**B. Project Background and Need**

The Company regularly looks for opportunities to reduce its costs and save customers money. This summer, the MPUC requested that the Company explore projects which might provide some economic stimulus in light of current recessionary conditions resulting from the COVID-19 pandemic. In response to that request and because we believed repowering projects could reduce overall system costs, we issued an RFP for possible repowering projects.

Our solicitation did not identify a specific capacity target for repowering; we were open to pursuing any project that, as part of the full portfolio of projects, provides economic benefit to customers. When we first announced this initiative, the Company anticipated we might receive bids totaling approximately 800-1,000 MW; ultimately, we received 11 bids, covering 9 distinct projects, totaling approximately 850 MW. The four projects that are the subject of this application, totaling approximately 651 MW, have progressed through the evaluation process and were found to yield customer benefits. As noted previously, there are an additional three potential PPA repowering projects, totaling 67 MW, for which we are currently in the process of negotiating contracts.

**C. Project Selection Process**

For the wind repowering solicitation, we used a process similar to that used for the wind portfolio the Commission approved in Case No. PU-17-120, in which both outside developers and Company self-build options were considered. We issued our wind repowering solicitation on July 27, 2020, with bids due to our RFP team on August 21, 2020. The Company also developed self-build portfolio options, which were completed and submitted prior to August 21.

**D. Proposal Evaluation and Shortlisting Process**

The 2020 Wind Repowering solicitation set out a multi-phase analysis process to determine the final portfolio of proposed projects. Our solicitation yielded 11 total bids for 9 distinct projects; some bidders (including the Company's portfolios of bids) provided multiple options for the same project, with varying parameters such as commercial operation date (COD) and expected federal production tax credit (PTC) qualification. Our first phase of review indicated that four of the bids we received were initially incomplete. However, all bidders were able to remedy the deficiencies identified in this step, and all bids moved onto more substantive evaluation.

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

We then thoroughly evaluated each bid with respect to the RFP's requirements. We examined a variety of factors, including bidder creditworthiness and development experience, whether a bid proposed to repower a facility that currently delivers energy to our system; whether the proposed project meets required interconnection standards; and, perhaps most essentially, whether the proposed project will deliver customer savings on an individual basis.

As a threshold matter, we evaluated each of the projects for cost effectiveness using a "pro-forma" analysis. Under the pro forma analysis we isolate the project and analyze its economics on a stand-alone basis. As described further below, each of the projects selected from the solicitation showed cost savings on a PVRR basis through this analysis. Our pro forma analysis provided the last screen for project shortlisting.

After finalizing the shortlist of projects for consideration, the Company modeled the full Wind Repower Portfolio together to determine whether it is expected to yield customer benefits, on a net present value basis. In this stage of the process, we modeled all shortlisted projects together in EnCompass (including the PPA projects) and evaluated portfolio benefits (or costs) relative to a Base Case where the projects are not repowered. The full portfolio of shortlisted projects did result in customer benefits in our EnCompass modeling, and thus no projects fell out of consideration in this final stage. We discuss modeling results further below in Section V.

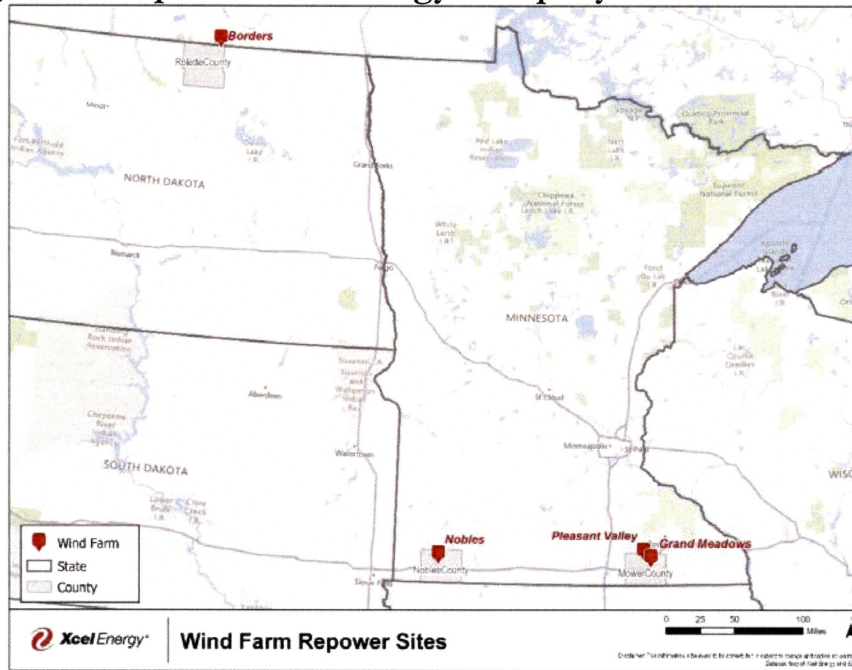
With the pro forma screening of individual proposed projects and the later portfolio screening in EnCompass, the Company was focused on reducing costs for customers and only selected projects demonstrating such savings. Our Independent Auditor – Leidos – then validated our selection process.

#### **IV. Project/Site Descriptions**

In this section, we provide information regarding each of the projects comprising the proposed Wind Repower Portfolio, including affiliation, location, project size, net capacity factor, projected annual energy output, total project cost, expected project schedule, interconnection details (where relevant), and levelized cost of energy (LCOE). These are Company-owned, self-build projects. We intend to oversee all aspects of construction for each one and believe we can achieve efficiencies by building and managing these projects as a single portfolio. We have already begun negotiations with component suppliers, via Xcel Energy Capital Services LLC, and plan to finalize these agreements upon approval by our state regulators.

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

**Figure 1: Proposed Xcel Energy Company-owned Wind Repowers**



**A. Border Winds**

Border Winds is a 150 MW wind facility located on approximately 24,640 acres of land in Rolette County, North Dakota. The facility was originally placed into service in 2015, interconnecting at the Peace Garden 230 kV substation, where NSP is also the Transmission Owner. The proposed project will repower the full capacity of the facility. **[TRADE SECRET DATA BEGINS**

**TRADE SECRET DATA ENDS].**<sup>5</sup> The project will continue to use the existing interconnection.<sup>6</sup> We expect the repowered project will commence operation in 2024, and that the repowering work will extend Border Winds’ useful life with new

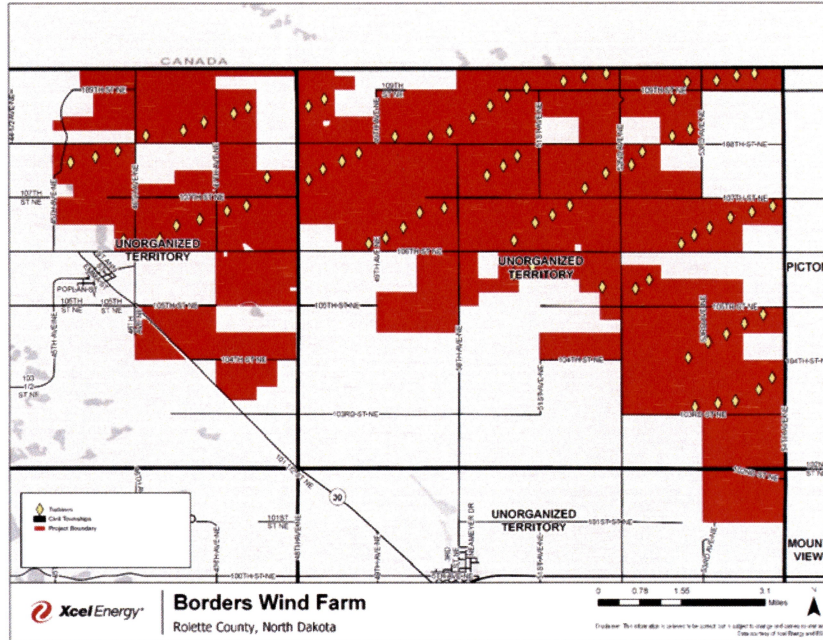
<sup>5</sup> The maximum facility production MW output will be increased to more than the POI MW output per the original GIA with the turbine uprate which is allowed under FERC 845. By overbuilding the plant MW output (offsetting electrical losses in the system, planned and unplanned turbine outages or other electrical losses of the plant) but limiting the MW output at the POI per the original GIA (150MW) the facility will be able to realize more energy production during periods when the facility is not producing the maximum MW output.

<sup>6</sup> The Company does plan to submit a Permissible Technology Advancements (PTA) request to MISO. The proposed repowering is not expected to constitute a material modification to the GIA and thus does not require an amendment.

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

components expected to last for a renewed 25-year period. Figure 2 shows the location of the Border Winds facility and proposed repower.

**Figure 2: Border Winds Repower Location**



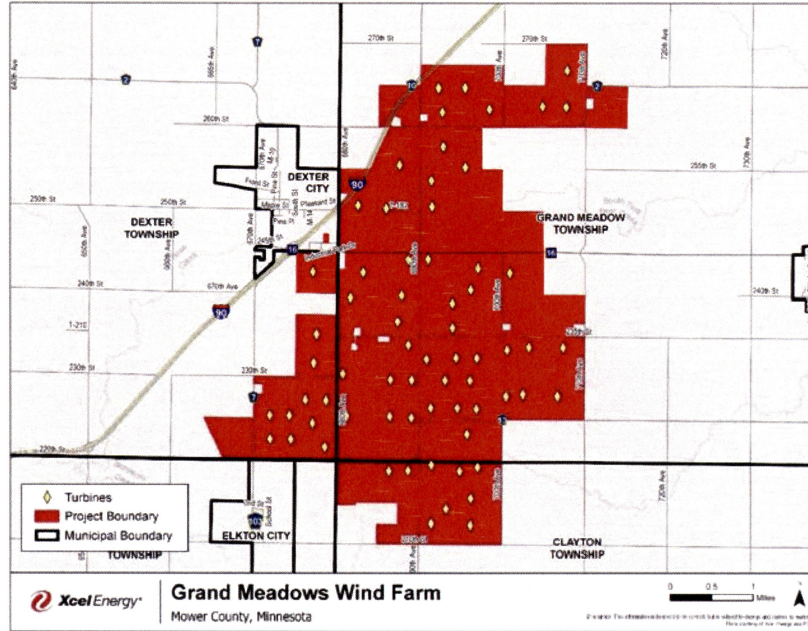
The Border Winds Repower is expected to achieve a net capacity factor (NCF) of approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS], resulting in an average annual production of approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] per year, depending on final layout and turbine selection. This represents an efficiency gain of nearly [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] over the existing facility’s average annual gross energy production levels.<sup>7</sup> Total capital costs for the Border Winds Repower are currently estimated at approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] (including Allowance for Funds Used During Construction, or “AFUDC”), which also covers the decommissioning expenses for the removed components. Given the estimated COD of 2024, we believe the project will qualify for [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] PTCs over its first ten years of repowered operation. The estimated LCOE for

<sup>7</sup> In other words, the repowered facility is expected to yield approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] times more in gross energy production than that of the existing facility.



**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

**Figure 3: Grand Meadows Wind Repower Location**



The Grand Meadows Repower is expected to achieve a net capacity factor (NCF) of approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS], resulting in an average annual production of approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] per year, depending on final layout and turbine selection. This represents an efficiency gain of [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS], relative to the existing facility's estimated average annual gross energy production. Total capital costs for the Grand Meadows Repower are currently estimated at approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] (including AFUDC), which also covers decommissioning expenses for the removed components. Given the estimated COD of 2023, we believe the project will qualify for [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS]

[TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] PTCs over its first ten years of repowered operation. The estimated LCOE for the project is [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS], which represents a [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] reduction in LCOE relative to the existing facility.

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

This project will support construction employment in the area and extended local land lease and tax benefits. We estimate that the project will create at least 100 temporary construction jobs over the duration of the repowering project. Over the project's expected 20 years of useful life (from the date of the repower's COD), the local area will benefit from extended average landowner payments of just over [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] per year, and average local property tax revenue of nearly [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] per year. In total, these benefits amount to over \$1.3 million per year.

**C. Nobles**

Nobles is a 201 MW wind facility located on approximately 27,465 acres of land in Nobles County, Minnesota. The facility was originally placed into service in 2010, interconnecting at the Nobles 34.5 kV substation, where NSP is also the Transmission Owner. The proposed project will repower the full capacity of the facility, [TRADE SECRET DATA BEGINS

**TRADE SECRET DATA**

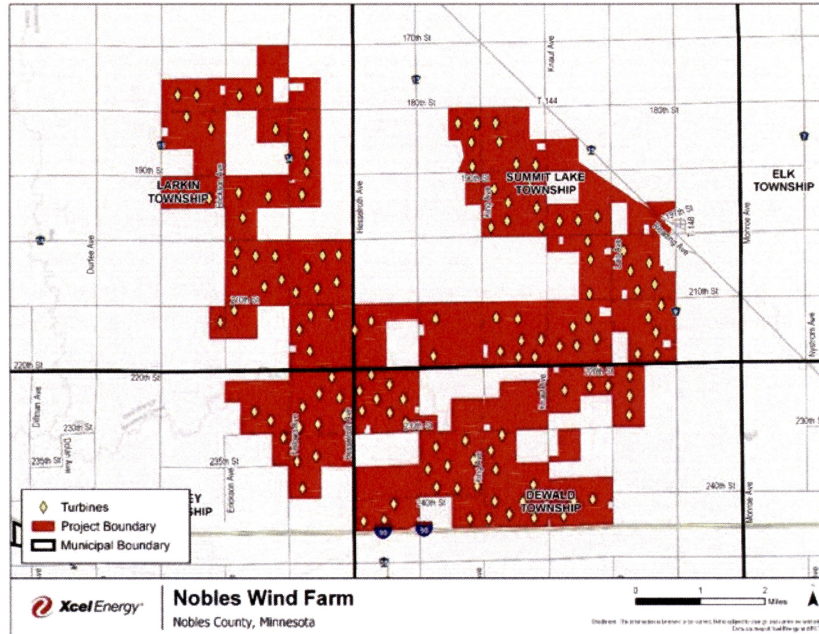
**ENDS]** turbines, and it will continue to use the existing interconnection.<sup>9</sup> We expect the repowered project will commence operation in 2022, and that the repowering work will extend Nobles' useful life with new components expected to last for a renewed 25 year period. Figure 4 shows the location of the Nobles facility and proposed repower.

---

<sup>9</sup> The Company does plan to submit a Permissible Technology Advancement (PTA) request to MISO. The proposed repowering is not expected to constitute a material modification to the Generator Interconnection Agreement (GIA) and thus does not require an amendment.

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

**Figure 4: Nobles Wind Repower Location**



The Nobles Repower is expected to achieve a net capacity factor (NCF) of approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS], resulting in an average annual production of approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS], depending on final layout and turbine selection. This represents an efficiency gain of approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] over the existing facility’s average annual gross energy production levels. Total capital costs for the Nobles Repower are currently estimated at approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] including AFUDC, which also covers decommissioning expenses for the removed components. Given the estimated COD of 2023, we believe the project will qualify for [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] percent PTCs over its first ten years of repowered operation. The estimated LCOE for the project is [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS], which represents a [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] reduction relative to the existing facility. We note here, however, that one of our portfolio proposals included an option for Nobles that achieved [TRADE

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

**SECRET DATA BEGINS** **TRADE SECRET DATA ENDS]** PTCs. As noted above, we did not advance this proposal because there remains some uncertainty regarding **[TRADE SECRET DATA BEGINS**

**TRADE SECRET DATA ENDS]**. That said, the Company intends to reserve the ability to achieve additional PTCs. If achieved, we expect customers will experience increased benefits relative to those described in Section V below.

This project will support construction employment in the area and extended local land lease and tax benefits. We estimate that the project will create around 200 temporary construction jobs over the duration of the repowering project. Over the project's expected 25 years of useful life (from the date of the repower project's COD), the local area will benefit from extended average landowner payments of approximately **[TRADE SECRET DATA BEGINS** **TRADE SECRET DATA ENDS]** per year, and average local property tax revenue of approximately **[TRADE SECRET DATA BEGINS** **TRADE SECRET DATA ENDS]** per year. In total, these benefits amount to over \$2.5 million per year.

**D. Pleasant Valley**

Pleasant Valley is a 200 MW wind facility located on approximately 72,740 acres of land in Mower County, Minnesota. The facility was originally placed into service in 2015, interconnecting at the Pleasant Valley 161 kV substation, via a GIA between the Company and Great River Energy (GRE).<sup>10</sup> The proposed project will repower the full capacity of the facility. **[TRADE SECRET DATA BEGINS**

**TRADE SECRET DATA ENDS]**.<sup>11</sup>

The project will continue to use the existing interconnection under our GIA. We expect the repowered project will commence operation in 2024, and that the repowering work will extend Pleasant Valley's useful life with new components expected to last for a

---

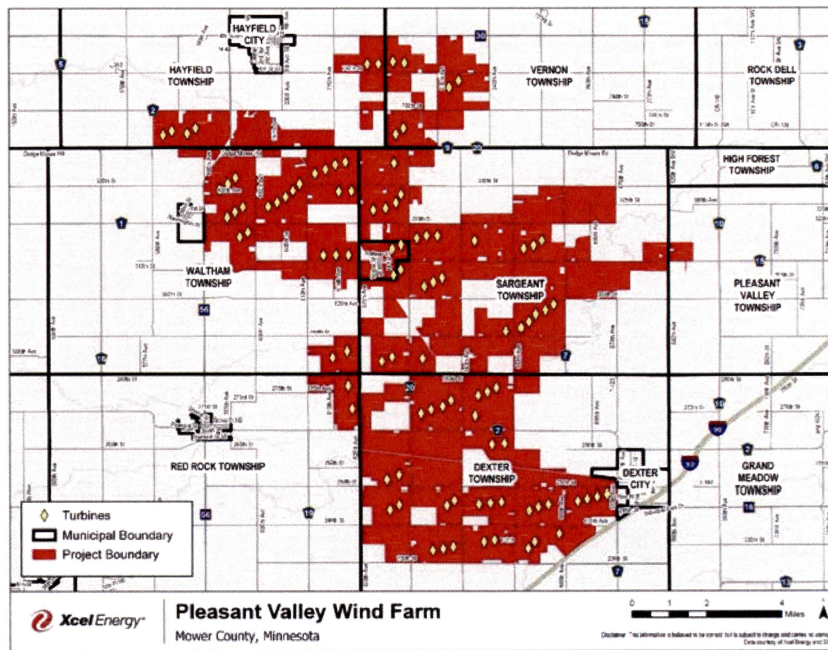
<sup>10</sup> The Company does plan to submit a Permissible Technology Advancements (PTA) request to MISO. The proposed repowering is not expected to constitute a material modification to the GIA and thus does not require an amendment.

<sup>11</sup> The maximum facility production MW output will be increased to more than the POI MW output per the original GIA with the turbine uprate which is allowed under FERC Order No. 845. By overbuilding the plant MW output (offsetting electrical losses in the system, planned and unplanned turbine outages or other electrical losses of the plant) but limiting the MW output at the POI per the original GIA (200MW) the facility will be able to realize more energy production during periods when the facility is not producing the maximum MW output.

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

renewed 25-year period. Figure 5 shows the location of the Pleasant Valley facility and proposed repower.

**Figure 5: Pleasant Valley Wind Repower Location**



The Pleasant Valley Repower is expected to achieve a net capacity factor (NCF) of approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS], resulting in an average annual production of approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] per year, depending on final layout and turbine selection. This represents an efficiency gain of [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS], relative to the existing facility’s estimated average annual gross energy production. Total capital costs for the Pleasant Valley Repower are currently estimated at approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] including AFUDC, which also covers decommissioning expenses for the removed components. Given the estimated COD of 2024, we believe the project will qualify for [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] PTCs over its first ten years of repowered operation. The estimated LCOE for the project is [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS], which

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

represents a [TRADE SECRET DATA BEGINS TRADE SECRET  
DATA ENDS] reduction relative to the existing facility.

This project will support construction employment in the area and extended local land lease and tax benefits. We estimate that the project will create around 200 temporary construction jobs over the duration of the repowering project. Over the project's expected 25 years of useful life (from the date of the repower COD), the local area will benefit from extended average landowner payments of approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] per year, and average local property tax revenue of approximately [TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS] per year. In total, these benefits amount to over \$3.1 million per year.

## V. ECONOMIC ANALYSIS

### A. Pro Forma Analysis

To evaluate each bid's expected net benefit to customers, we ran each individual proposed project through a "pro forma" spreadsheet analysis. The pro forma compares the expected costs of each repower proposal to a baseline where the existing (unrepowered) project remains in our portfolio to the end of its expected life and is replaced by a generic wind resource thereafter.<sup>12</sup> Our pro forma modeling allowed us to screen projects for expected benefits prior to full resource planning modeling using EnCompass. In the course of this evaluation, we discovered that two of the projects bid into the solicitation were not expected to yield customer benefits at the price and terms provided. These projects were eliminated from further consideration. The pro forma analysis indicated that the four projects included with this application (and the PPA projects that included in the broader portfolio) will result in customer benefits.

On an aggregate basis, the pro forma analysis showed \$138 million in savings for the Company-owned projects and \$26.25 million in savings for the PPA projects. Table 2 below shows the results of the pro forma analysis for each individual project.

---

<sup>12</sup> We also performed pro forma analyses of each of the projects using a baseline where the existing (unrepowered) project remains in our portfolio to the end of its expected life and is then replaced with market replacement energy. The results of that pro forma analysis are presented in the testimony of Company witness Farah Mandich.

**PUBLIC DOCUMENT  
NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

**Table 2: Pro Forma Savings Resulting from Wind Repower Portfolio**

Project Name	Type	Repower Cost Savings \$M
		<b>[TRADE SECRET DATA BEGINS]</b>
Border Winds	Company-owned	
Grand Meadow Wind	Company-owned	
Nobles Wind	Company-owned	
Pleasant Valley Wind	Company-owned	<b>TRADE SECRET DATA ENDS]</b>
Company-Owned		(\$138)
Ewington Wind	PPA	<b>[TRADE SECRET DATA BEGINS]</b>
McNeilus Wind	PPA	
Westridge Wind	PPA	<b>TRADE SECRET DATA ENDS]</b>
PPA		(\$26.25)

**B. EnCompass Analysis**

The Company used the EnCompass resource planning model to evaluate the impact of the proposed Wind Repower Portfolio on customers. Encompass is a capacity expansion tool that allows the Company to optimize resource expansion plans based on a set of assumptions. Like our previously-used resource planning model, Strategist, EnCompass simulates the operation of the NSP System and estimates the total cost of

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

energy over the life of the project on a present value basis. However, one of the primary differences between EnCompass and Strategist is that Encompass evaluates resource needs and cost on a chronological hourly basis, which better accounts for hourly variations on our system. The Company has largely shifted to using the EnCompass tool rather than Strategist to perform capacity-expansion modeling because as we add more variable resources to our system, it becomes increasingly important to ensure we appropriately considering resource needs on an hourly basis.

We evaluated the economic impact of the Wind Repower Portfolio, which as noted above includes the three PPA projects, using as the Base Case the plan presented in our most recent Integrated Resource Plan Supplement, filed with the Commission on June 30, 2020.<sup>13</sup> Our modeling also reflects the addition of the Mower County Wind resource in response to the Commission's approval in Case No. PU-19-310, along with other updates since we filed our Supplement Preferred Plan at the end of June. The full list of modeling assumptions is provided as Schedule 2 to the testimony of Company Witness Farah L. Mandich.

Our analysis takes the Base Case, and then analyzes a change case in which the proposed repowering portfolio replaces the relevant existing resource(s) in our overall generation portfolio. The Company's full Upper Midwest system resource portfolio is then re-optimized in order to evaluate whether moving forward with these repowered projects will provide benefits or result in additional costs on a system-wide basis. Our modeling shows that the Wind Repower Portfolio results in net benefits. Although the PPA rebuild projects were included in the modelling, they are relatively small and the vast majority of the benefits result from the larger projects that are the subject of this application.

As discussed above, prior to conducting expansion modeling using Encompass, we had already established—through our pro forma analysis—that each individual project would be expected to provide customer benefits, relative to a future in which the existing plant remained in-service until the end of its asset or contract life, and was then replaced with a generic wind resource. However, in a full system planning analysis, the model may select from a wide variety of resources to replace an expiring resource, or – depending on the loads and resources on the system at the time – it may not need to

---

<sup>13</sup> See Case No. PU-19-220. XCEL ENERGY 2020-2034 UPPER MIDWEST INTEGRATED RESOURCE PLAN SUPPLEMENT (June 30, 2020).

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

be replaced at all. Portfolio modeling in the EnCompass tool allows us to simulate our future system and evaluate these tradeoffs.

Although they are not the subjects of this Application, the contemplated PPA rebuilds are part of the Company’s overall repowering proposal and were included in the modelling along with the proposed Company-owned projects as part of the Wind Repower Portfolio. Assessing the benefits of repowering and extending the life of existing assets on our system requires that we remove the existing plants from our system portfolio and replace them with the proposed repowered units’ costs and characteristics. For the proposed PPA projects, the Company assumes that the existing PPA ends upon in-servicing the repowered project and the new price, proposed PPA term and expected operating characteristics (e.g. NCF and expected generation profiles) take effect. For the Company-owned projects that are the subject of this application, we make similar adjustments, except that we have assumed that the remaining rate base on the existing plants is recovered over the lifetime of the repowered asset.

The results of our EnCompass analysis show that we expect the Wind Repower Portfolio, including the contemplated rebuild PPA projects, to result in significant net benefit to our customers over the analysis period. This analysis is on a PVRR basis, and does not include CO<sub>2</sub> costs, other externality values, or future potential regulatory costs of carbon emissions. Table 3 below shows expected net present value benefits resulting from the proposed portfolio, including sensitivity analyses for high and low gas, coal, and market prices.

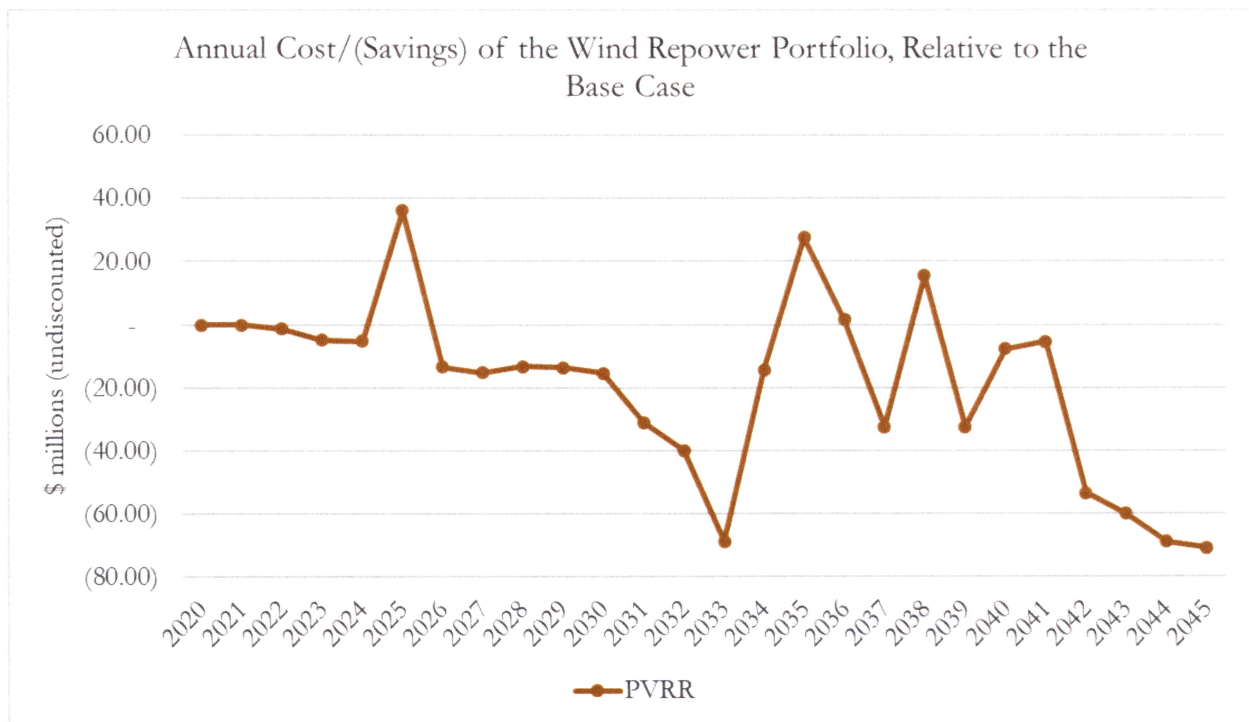
**Table 3: PVRR Savings (EnCompass Modeling)**

<b>Present Value Measure</b>	<b>Cost/(Savings) (\$2020 millions)</b>
<b>PVRR</b> (No CO <sub>2</sub> Costs)	<b>(163)</b>
<i>Sensitivities</i>	
Low Gas, Coal, and Market Prices	<b>(98)</b>
High Gas, Coal, and Market Prices	<b>(248)</b>

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

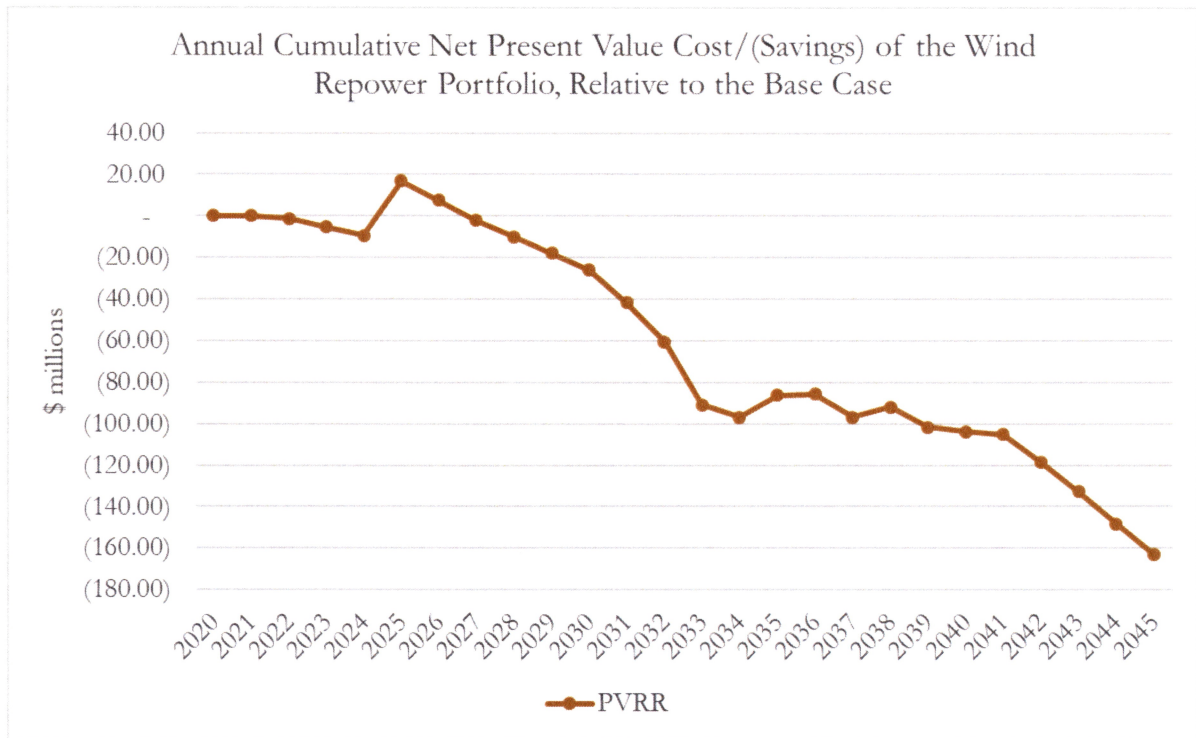
To understand how these potential costs or savings accrue over time, we examined total system costs on an annual and cumulative basis. Figures 6 and 7 below portrays the annual and cumulative (undiscounted) system costs impacts of incorporating the Wind Repower Portfolio into our system. Given these results, we expect that all customers will experience benefits from the portfolio in nearly every year, with benefits accruing immediately and more than offsetting a small number of years when costs may increase relative to the Base Case. In short, the portfolio captures substantial customer benefits overall.

**Figure 6: Annual Costs (Savings) vs. the Base Case**



**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

**Figure 7: Cumulative Costs (Savings) vs. the Base Case**



As shown in the Figures above, customers begin experiencing cost savings as soon as 2022, when existing facilities begin to be replaced with new, lower cost repowered projects. Savings continue to accrue until 2025, where there is a one-year increase in costs, relative to the Base Case. This cost increase is primarily a factor of a difference in PTCs earned on two of the Company’s proposed Company-owned repowering projects and their impacts on ratemaking with respect to our deferred tax asset. Both Border Winds and Pleasant Valley were in-serviced in 2015. As such, in the Base Case where the units are not repowered – they would have had one final year of their existing level of PTC qualification. In the Wind Repower Portfolio Case, these projects would no longer receive that same level of PTCs as of the repower in-service date, which is at the end of 2024. The repowered projects are expected to qualify for partial PTCs for ten additional years as of their COD date; however, the PTCs they will accrue in 2025 are lower than in the Base Case, and thus we see the cost delta increase in that one year. That said, we note that part of this cost is offset by cost savings the Company will

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

experience as a result of the repowered, higher efficiency wind facilities and resulting reduced market purchases and increased market sales. We also note that the remainder of increased costs in 2025 are fully offset by accrued savings in other years by 2027.

After 2025, customers begin accruing savings again in the Wind Repower Portfolio Case, relative to the Base Case. In the near term, these cumulative savings are largely a result of the repowered facilities' increased efficiency, displacing higher cost generation from other resources on the system and increasing market sales. As shown in Figure 7, customer benefits grow to be substantial, on a cumulative basis, through the end of the analysis period. Sharp changes in the savings trends in any given future year are generally driven by either PTCs expiring for the repowered projects in the early 2030's, and/or new generic units in the expansion plan moving up or back a year, relative to the Base Case.

## **VI. PRUDENCE OF THE WIND REPOWERING**

The Company's proposed wind repowering projects are prudent. We analyzed each individual project on a pro forma basis, which demonstrated savings for customers for each project, and then evaluated the overall wind repowering portfolio using EnCompass, which also indicated that the projects will result in reduced energy costs for our customers. Based on our analysis, we believe it is reasonable and in our customers' interests for the Commission to grant an ADP for these projects. In addition, the Company also notes that under N.D.C.C. § 49-05-16(7) the proposed repowering of Border Winds is presumed to be prudent.

Our analysis shows that the repowering projects we propose will result in significant savings to customers, approximately \$163 on a PVRR basis. Our sensitivity analysis shows that even if future natural gas prices are lower than expected, the projects are still expected to benefit customers.

Our analysis leads us to conclude that the repowering of these wind resources is prudent because it will deliver substantial financial benefits to our customers. These financial benefits will be reflected in a lower cost of energy and in a hedge against future increases in fuel costs and governmental regulation. Thus, the Company is cost-effectively acquiring the resources needed to meet the regulatory requirements of the jurisdictions in which we provide service.

**PUBLIC DOCUMENT**  
**NOT-PUBLIC AND TRADE SECRET DATA EXCISED**

Ultimately, for any Company-owned repowering projects approved, the Company proposes to recover its costs through either an Renewable Energy Rider filing or inclusion in a future rate case. Such requests would include both the existing rate base on the four existing facilities, as well as the new rate base associated with the repowering, over the newly extended lives of the repowered projects.

**VII. CONCLUSION**

For all the reasons set forth above, Xcel Energy respectfully requests the Commission grant an ADP for the Company's proposed repowering of Border Wind, Grand Meadows Wind, Nobles Wind, and Pleasant Valley Wind.<sup>14</sup>

Dated: October 13, 2020.

Northern States Power Company

Respectfully submitted,

*/s/ Christopher J. Shaw*  
CHRISTOPHER J. SHAW  
MANAGER, REGULATORY POLICY

---

<sup>14</sup> The Company also notes that while it is seeking approval for all four projects as each will benefit customers, the Commission also has the option to grant an ADP for individual projects or a subset of the proposed projects.