

**STATE OF MINNESOTA  
BEFORE THE  
MINNESOTA PUBLIC UTILITIES COMMISSION**

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In the Matter of Minnesota Power's  
Petition for Approval of a 250 MW  
Nobles 2 Wind Power Purchase  
Agreement

Docket No. E-015/M-18-\_\_\_\_\_

**PETITION FOR APPROVAL**

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**SUMMARY OF FILING**

PLEASE TAKE NOTICE that on August 22, 2018, Minnesota Power (the "Company") submitted to the Minnesota Public Utilities Commission ("Commission") a revised Petition for Approval of an Amended and Restated Power Purchase Agreement (the "PPA" or "Agreement") with Tenaska, Inc. for the purchase of 250 MW of wind-generated energy and capacity from the Nobles 2 wind-generation facility ("Project"), located in Nobles County in southwestern Minnesota, to serve Minnesota Power's customers. This Petition is filed in accordance with the Commission's September 19, 2017 Order Referring Gas Plant for Contested Case Proceedings, and Notice and Order for Hearings in Docket Nos. E-015/AI-17-568 and E-015/RP-15-690, which directed the Company to refile its wind PPA in a separate docket. In this Petition, the Company requests approval of the wind PPA portion of the Company's overall *EnergyForward* Resource Package, a unique and synergistic combination of resources designed as an integrated package.

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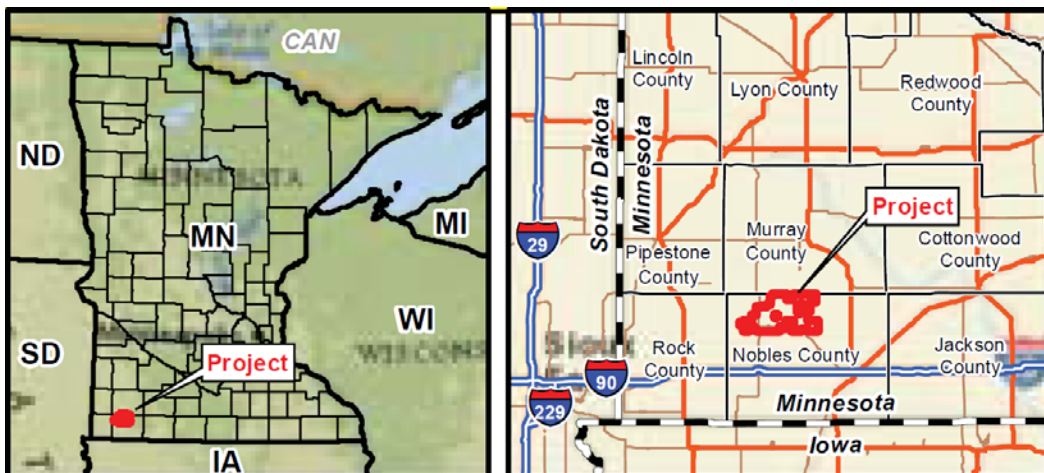
Docket No. E-015/M-18-\_\_\_\_\_

**PETITION FOR APPROVAL**

**I. INTRODUCTION**

Minnesota Power (the “Company”) submits to the Minnesota Public Utilities Commission (“Commission”) this revised Petition for Approval of an Amended and Restated Power Purchase Agreement (the “PPA” or “Agreement”) with Tenaska, Inc.<sup>1</sup> under Minn. Stat. §§ 216B.1645 and 216B.1691 and Minn. Rules 7829.1300. The Agreement is for the 20-year purchase of 250 MW of wind-generated energy and capacity from the Nobles 2 wind-generation facility, located in Nobles County in southwestern Minnesota, to serve Minnesota Power’s customers. The site location is shown in Figure 1 below. Minnesota Power requests that the Commission confirm the PPA to be a reasonable and prudent way for the Company to continue to meet its obligations under Minnesota’s Renewable Energy Standard in Minn. Stat § 216B.1691 and the Integrated Resource Plan Order (“July 2016 IRP Order”) as discussed below.

**Figure 1: Nobles 2 Wind Facility Location**



<sup>1</sup> The PPA is between Minnesota Power and Nobles 2 Power Partners, LLC, an affiliate of Tenaska, one of the largest private, independent energy companies in the United States, with a nearly 30-year record of success in development, design, financing, construction management, and operation of energy facilities (<http://www.tenaska.com>).

This Petition is similar to requests initially made in the Company’s Petition for Approval of the *EnergyForward* Resource Package in Docket Nos. E015/AI-17-568 and E015/RP-15-690 on July 28, 2017. The *EnergyForward* Resource Package is comprised of (i) a PPA for 250 MW of wind generation, (ii) a PPA for 10 MW of solar generation,<sup>2</sup> and (iii) affiliated interest agreements for approximately 250 MW of dispatchable natural gas capacity.<sup>3</sup> In its September 19, 2017 Order Referring Gas Plant for Contested Case Proceedings, and Notice and Order for Hearings, the Commission directed the Company to refile its wind and solar PPAs for Commission approval in a separate docket. This Petition is the refiling of the wind PPA.

The *EnergyForward* Resource Package was submitted to implement the Commission’s July 2016 IRP Order approving the Company’s 2015 Integrated Resource Plan (“2015 Plan”).<sup>4</sup> In that order, the Commission directed the Company to investigate and propose safe, affordable, and environmentally-appropriate power supplies, including replacement capacity and additional wind and solar energy to support long-term customer needs. Order Point 9 states, “By the end of 2017, Minnesota Power shall initiate a competitive bidding process to procure 100-300 MW of installed wind capacity.”<sup>5</sup>

In compliance with Order Point 9, the Nobles 2 Wind Project was selected through a request for proposal (“RFP”) process. Minnesota Power has executed a 20-year PPA for the output of the facility, capacity, and renewable attributes.

The PPA brings considerable value to Minnesota Power customers, with a pre-established price that reflects qualification for the 100 percent PTC, limited risk, and geographic diversity of the Company’s renewable generation portfolio. The PPA also brings value to State of Minnesota by building new renewables in the state. The project will benefit local economies through landowner lease payments, production taxes, jobs (both temporary construction and permanent operations and maintenance jobs), and other local spending.

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<sup>2</sup> See Docket No. E015/M-18-401.

<sup>3</sup> See Docket No. E015/AI-17-568.

<sup>4</sup> *In the Matter of Minn. Power’s 2015-2029 Integrated Res. Plan*, Docket No. E015/RP-15-690, ORDER APPROVING RESOURCE PLAN WITH MODIFICATIONS (July 18, 2016).

<sup>5</sup> July 2016 IRP Order at 15.

The PPA also continues the Company's long-term *EnergyForward* initiative, which focuses on a fleet transformation toward an overall mix of two-third renewables plus renewable-enabling natural gas, and one-third compliant coal. This combination will reduce emissions and increase renewable penetration without sacrificing cost competitiveness and the reliability of Minnesota Power's power supply. This transformation calls for the strategic addition of resources to ensure adequate energy and capacity to meet existing and future customer needs. Implementation of the resource package arising out of the 2015 Plan will result in a resource mix of approximately 45 percent renewables (including hydroelectric) and more than a 40 percent reduction in greenhouse gas emissions by 2025 from 2005 levels.

There have been two noteworthy changes affecting wind project developments since the PPA was originally filed in July 2017 which have resulted in changes to the PPA and the delayed refiling of this Petition. First, the Tax Cut and Jobs Act ("TCJA") was enacted into federal law, effective January 2018. The TCJA increases the costs of tax advantaged investments such as wind and these impacts have increased the PPA price. Second, the Company learned that, due to a significant number of projects applying to interconnect to Midcontinent Independent System Operator ("MISO"), there has been a delay in MISO's interconnection study and there are indications that transmission upgrade costs could be significantly higher than initially anticipated. Because of this, the PPA was renegotiated to reflect [TRADE SECRET DATA EXCISED]. These changes are described in more detail in Section III. D.

The Amended and Restated Power Purchase Agreement is included as Appendix A. The price is [TRADE SECRET DATA EXCISED] adjusted for transmission network upgrade costs at [TRADE SECRET DATA EXCISED]. The all-in levelized PPA pricing over the term of the contract ranges from [TRADE SECRET DATA EXCISED]. The Nobles 2 Wind Project PPA is expected to provide over 1 million MWh of energy each year, provide system benefits, and to be in operation in 2020.

## II. PROCEDURAL MATTERS

### A. General Filing Information

Pursuant to Minn. Rule 7829.1300, Minnesota Power provides the following required general filing information.

#### 1. Summary of Filing (Minn. Rule 7829.1300, subp.1)

A one-paragraph summary accompanies this Petition.

#### 2. Service on Other Parties (Minn. Rule 7829.1300, subp. 2)

Pursuant to Minn. Stat. § 216.17, subd. 3 and Minn. Rules 7829.1300, subp. 2, Minnesota Power eFiles the Petition on the Department of Commerce – Division of Energy Resources (“Department”) and the Residential Utilities Division of the Office of Attorney General. A summary of the filing prepared in accordance with Minn. Rules 7829.1300, subp. 1 is being served on Minnesota Power’s general service list.

#### 3. Name, Address and Telephone Number of Utility (Minn. Rule 7829.1300, subp. 4(A))

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30 West Superior Street  
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#### 4. Name, Address and Telephone Number of Utility Attorney (Minn. Rule 7829.1300, subp. 4(B))

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**5. Date of Filing and Date Proposed Rate Takes Effect (Minn. Rule 7829.1300, subp. 4(C))**

This Petition is being filed on August 22, 2018 and will have no effect on Minnesota Power's base rates. A condition precedent in the Agreement is approval by the Commission within ten months of filing this Petition.

**6. Statute Controlling Schedule for Processing the Filing (Minn. Rule 7829.1300, subp. 4(D))**

This Petition is made pursuant to Minn. Stat. § 216B.1645. Furthermore, Minnesota Power's Petition falls within the definition of a "Miscellaneous Tariff Filing" under Minn. Rules 7829.0100, subp. 11 and 7829.1400, subs. 1 and 4, permitting comments in response to a miscellaneous filing to be filed within 30 days, and reply comments to be filed no later than 10 days thereafter.

**7. Utility Employee Responsible for Filing (Minn. Rule 7829.1300, subp. 4(E))**

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**8. Impact on Rates and Services (Minn. Rule 7829.1300, subp. 4(F))**

This Agreement will in and of itself will have no effect on Minnesota Power's base rates. The energy costs under the Agreement will be assigned through Minnesota Power's Rider for Fuel and Purchased Energy to customers. The energy associated with the PPA is intended to be used by Minnesota Power's customers and is not intended to be sold into the MISO market to create energy margins.



**9. Service List (Minn. Rule 7829.0700)**

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**B. Eligible Energy Technology Determination**

Minnesota Power is proud to have achieved its requirements under Minnesota’s Renewable Energy Standard several years early and is currently in compliance with the 2025 requirement of providing 25 percent of its energy from renewable energy sources. While the renewable energy attributes of the Agreement are not currently needed to meet the Renewable Energy Standard, Minnesota Power requests that the Commission confirm the PPA to be a reasonable and prudent way for the Company to continue to meet its obligations under Minn. Stat § 216B.1691. This will allow the renewable attributes associated with the PPA to be utilized on behalf of customers if they are needed in the future.

**C. Justification for Excising Trade Secret Information**

Minnesota Power provides the Agreement in Appendix A. The Agreement and this Petition contain material designated as “Trade Secret” pursuant to Minn. Stat. § 13.37, subd. 1(b) and they are filed consistent with the Commission policy on trade secret material. Minnesota Power believes that all information identified as “Trade Secret” within this filing meets the requirements of Minn. Stat. § 13.37, subd. 1(b) and Minn. Rule 7829.0500. A statement regarding justification for excising Trade Secret information accompanies this Petition.

### III. DEVELOPMENT OF THE NOBLES 2 PPA

Minnesota Power is seeking Commission approval of the PPA with Tenaska, Inc., to purchase 250 MW of wind-generated energy and capacity from the Nobles 2 wind-generation facility in Nobles County in southwestern Minnesota. The Nobles 2 Wind Project PPA is an integral component of Minnesota Power's larger *EnergyForward* Resource Package that brings an economical and geographically-diverse wind asset to the power supply.

In compliance with Order Point 9 of the Commission's July 2016 IRP Order, the Company issued an RFP (the "Wind RFP") on July 27, 2016, seeking power supply proposals for up to 300 MW of cost-effective wind resources. Minnesota Power was seeking proposals that utilize the federal production tax credit ("PTC"), offer capacity that is accreditable under current MISO resource adequacy rules in MISO Local Resource Zone 1, and have an initial term of 20 years or longer. Proposals could have commercial operation dates between January 1, 2018, and December 31, 2020. Responses were due by September 7, 2016.

Minnesota Power provided notice of the Wind RFP to potential bidders through news media as well as industry publications and websites, and received a robust RFP response with proposals for 35 project sites from 17 bidders, totaling over 5,000 MW of nameplate capacity. The Company did not submit a self-build proposal.

Minnesota Power retained the services of an independent evaluator, Sedway Consulting, Inc. ("Sedway Consulting"), to monitor the RFP process and evaluate the proposals. Sedway Consulting specializes in providing independent evaluation services and has evaluated thousands of power supply proposals in dozens of utility solicitations. All of the proposals were evaluated and ranked based on economics, including the value of energy produced, cost of energy, and debt equivalence on a levelized basis. The top-ranked proposals were also evaluated on non-economic factors (e.g., site control, permitting, interconnection, project team experience). See Section III.C for additional detail on the Wind RFP evaluation process and Appendix B for the independent evaluator's Wind RFP evaluation report.

From Sedway Consulting's evaluation and ranking, a short list of projects was established for PPA negotiations. The negotiations with the shortlisted bidders were monitored by the

independent evaluator, and concluded with Minnesota Power selecting the Nobles 2 Wind Project, developed by Tenaska, based on the initial offer received in the RFP. Further, the Strategist analysis filed on July 28, 2017, in the Energy Forward Resource Package petition, supported the selection of the Nobles 2 Wind Project from the other shortlisted wind projects, reflecting the other shortlisted proposals had higher net costs and other attributes that made them less attractive for meeting Minnesota Power's resource needs.

In December 2017, federal tax reform was enacted in the form of the TCJA, and in early 2018, Minnesota Power received notice from Tenaska that they were seriously considering exercising their right to terminate the Nobles 2 PPA based on tax reform changes unless there could be a revision in pricing. Minnesota Power re-entered into negotiations with Tenaska and was able to reach agreement on revised terms. The revised PPA terms remain competitive with the RFP bids from wind projects that are still available today.

#### **A. Proposed 250 MW Wind Meets Identified Need**

Based on the record in the 2015 Plan proceeding, the Commission concluded that Minnesota Power should begin a competitive acquisition process to procure 100 to 300 MW of installed wind capacity, a range reflecting the different recommendations of the Company, the Department, and environmental stakeholders based on modeling results.

In July 2016, Minnesota Power initiated its Wind RFP process to comply with the July 2016 IRP Order by initiating the required competitive bidding process to procure 100 to 300 MW of installed wind capacity by the end of 2017;<sup>6</sup> to use the current low-cost wind pricing created by the extension of the PTC to maximize benefits to its customers, and to investigate the benefits resulting from further geographic diversification of its wind resource portfolio. Based on the outcome of the RFP selection process and associated resource planning analysis filed in the *EnergyForward* Resource Package petition, Minnesota Power found that an additional 250 MW

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<sup>6</sup> July 2016 IRP Order at 11, 15 (“The Commission concludes that Minnesota Power should begin a competitive acquisition process, by the end of 2017, to procure 100-300 MW of installed wind capacity. This range reflects the positions of both parties; the final amount can be resolved in a future resource-acquisition proceeding with the benefit of specific proposals.”).

of wind generation, in a different geographic region than the current wind assets located in North Dakota, provides wind energy diversification at a low cost for its customers.

Minnesota Power’s current wind portfolio consists of more than 600 MW that include both utility-owned and PPA structures. Owned assets include the Bison 1, Bison 2, Bison 3, and Bison 4 Wind projects (totaling 496.6 MW), and the Taconite Ridge project (25 MW). PPA sources include the Oliver County I and II projects (totaling 98.6 MW). As shown in Figure 2 below, the bulk of Minnesota Power’s wind portfolio, 595.2 MW, is located near Center, North Dakota.

**Figure 2: Minnesota Power’s Existing Wind Resources and Nobles 2 Wind Project**

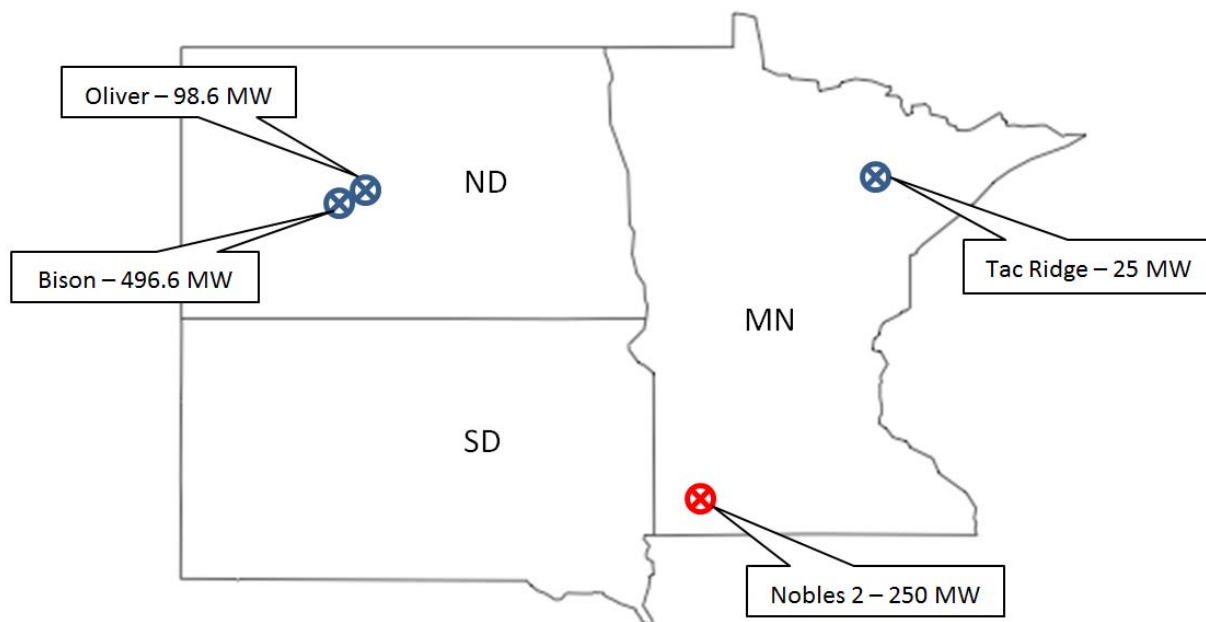
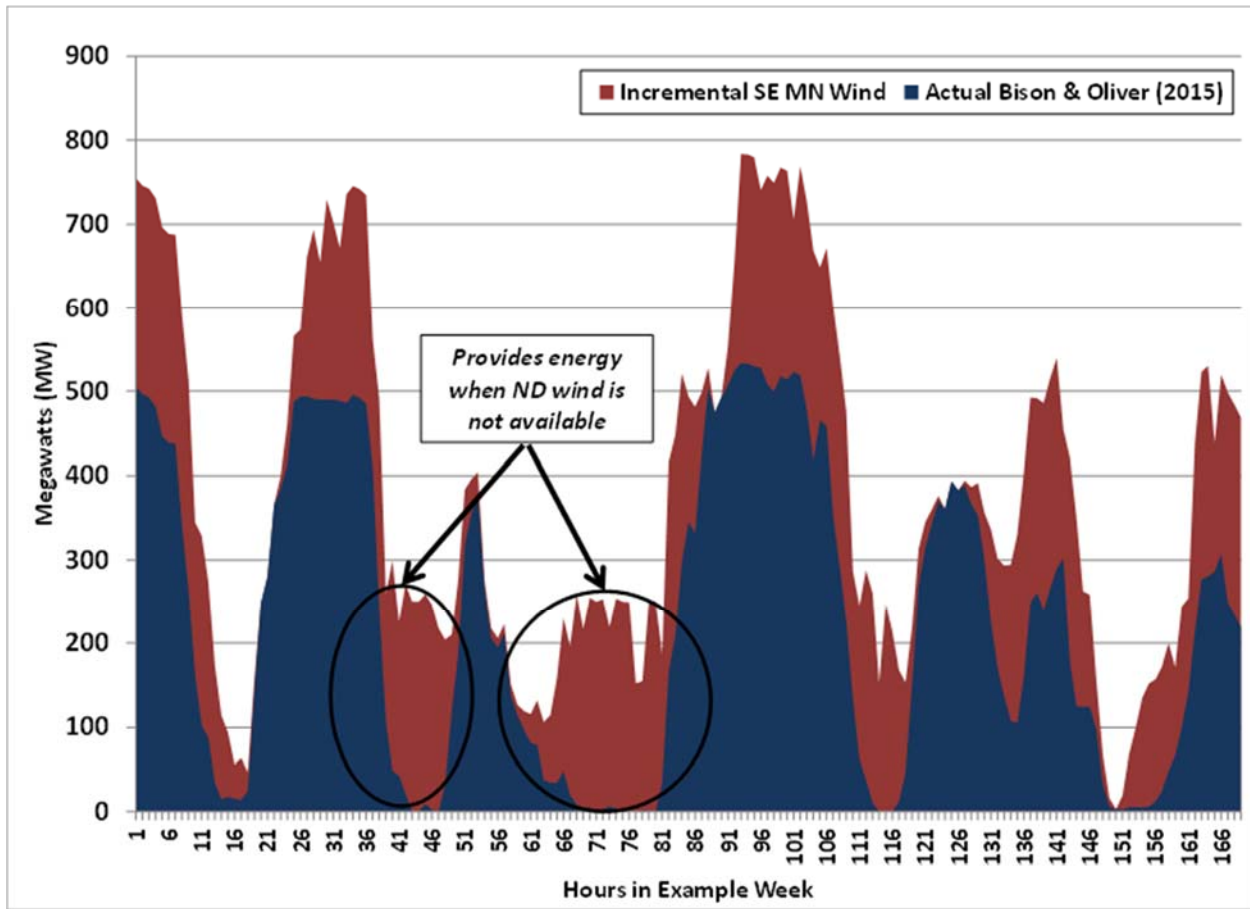


Figure 3 below shows the benefit of adding geographically-diverse wind to Minnesota Power’s existing wind portfolio — the 250 MW of new wind within Minnesota helps smooth out Minnesota Power’s wind generation by providing some wind generation during periods when there is no wind in North Dakota.

**Figure 3: Value of Geographically-Diverse Wind Production**



Compared to a wind portfolio concentrated in a single area, geographic diversity reduces Minnesota Power’s exposure to local transmission disruptions, and reduces the variability to total wind energy production. Geographically-diverse wind facilities are less likely to experience similar wind conditions at the same time, smoothing some of the peaks and valleys in total wind energy production.

## **B. Resource Planning Analysis**

Minnesota Power identified the Nobles 2 Project as a compelling addition to its power supply as it provides competitively priced wind energy to customers and advances its *EnergyForward* strategy to continue fleet transformation toward an overall mix of two-thirds renewables plus renewable-enabling natural gas, and one-third compliant coal, that will reduce emissions and increase renewable generation well beyond Minnesota Power’s 25 percent requirement under the state’s Renewable Energy Standard (“RES”). Combining Nobles 2 with the

greater EnergyForward Resource Package, including the proposed 250 MW share of the Nemadji Trail Energy Center, results in a power supply with reduced carbon dioxide (“CO<sub>2</sub>”) emissions and maintains Minnesota Power’s position as a state leader in renewable penetration without sacrificing cost competitiveness and the reliability of Minnesota Power’s power supply. The Renewable Energy Credits (“RECs”) from Nobles 2 will be used to meet the requirements of the RES. While Minnesota Power’s existing renewable portfolio is currently sufficient for compliance with the RES, adding Nobles 2 to the power supply will continue to demonstrate Minnesota Power’s leadership in incorporating renewable energy into its’ energy supply mix and allow the Company to continue to meet its RES compliance into the future.

To quantify these benefits and to ensure that the Project is cost effective as a wind energy resource for Minnesota Power’s customers, a power supply analysis was performed. The Nobles 2 Project was added to the current Minnesota Power supply planning portfolio to determine the customer impact of the 2020 addition.

To determine the cost impact of the Project in Minnesota Power’s long-term power supply, an incremental addition of the Project was added to Minnesota Power’s power supply and evaluated in the Strategist production cost modeling software.<sup>7</sup> The Strategist results quantified that the proposed Nobles 2 Project will: 1) displace fossil fuel generation and wholesale market purchases as the new wind energy is added to the Minnesota Power system, 2) reduce total CO<sub>2</sub> emissions, as well as other emissions, and 3) result in a decrease in power supply cost for Minnesota Power’s customers.

To quantify the change in power supply cost when adding the Project in 2020, the Strategist production cost model was utilized to simulate a power supply dispatch. There were ten Strategist futures utilized in the analysis with up to 30 sensitivities being conducted on each for a total of 272 cases used to simulate the potential impacts of the addition of the Nobles 2 Project.

Futures 1 through 8 were run – half with and half without – the Commission-approved CO<sub>2</sub> regulation cost of \$21.50 per ton in 2022, due to the uncertainty of the form of carbon regulation outcomes. Futures 9 and 10 included the Commission-approved CO<sub>2</sub> regulation cost and also included the Mid-Level Environmental Externality Values established by the Commission<sup>8</sup> in 2017. All futures included in the base case an 11 GWh per year of incremental energy efficiency

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<sup>7</sup> Resource planning analysis results and underlying assumptions are detailed in Appendix C.

<sup>8</sup> Docket Nos. E-999/CI-93-583 and E-999/CI-00-1636.

above the current State goal of 1.5 percent.<sup>9</sup> Included in the sensitivity analysis for each future were the 15 GWh (61.5 GWh total) and 30 GWh (76.5 GWh total) incremental energy efficiency scenarios. The key assumptions included in each of the ten futures are compared in Table 1 below.

**Table 1: Comparison of Key Assumptions by Future**

Futures	Strategist Case Name	Resource Adequacy Season	CO <sub>2</sub> Regulation Penalty	Mid-Environmental Externality Values	Turn Energy Market Off	Excess Energy Sold Into Wholesale Market
Future 1	C1SR	Summer	No	No	No	Yes
Future 2	C2SR	Summer	No	No	No	No
Future 3	C3SR	Summer	Yes	No	No	Yes
Future 4	C4SR	Summer	Yes	No	No	No
Future 5	C1WR	Winter	No	No	No	Yes
Future 6	C2WR	Winter	No	No	No	No
Future 7	C3WR	Winter	Yes	No	No	Yes
Future 8	C4WR	Winter	Yes	No	No	No
Future 9	C5S	Summer	Yes	Yes	Yes	No
Future 10	C5W	Winter	Yes	Yes	Yes	No

The ten futures were used to evaluate and compare three different resource portfolio and pricing scenarios. Scenario 1 (Baseline) contains all Minnesota Power existing thermal and renewable energy resources included in the 2017 *EnergyForward* Resource Package, except for the Nobles 2 Project. Scenarios 2 and 3 vary the potential cost of the transmission system upgrades required to interconnect the Project to the transmission system between zero and the maximum cap per the PPA. Scenario 2 incrementally adds the proposed Nobles 2 Project and associated project costs to the Scenario 1 (Baseline) scenario – without including additional costs for transmission system upgrades. Scenario 3 incrementally adds the maximum transmission system upgrade costs allowed to be passed on to Minnesota Power customers under the revised PPA terms, to Scenario 2 – representing the maximum cost customers could pay for Nobles 2 energy.<sup>10</sup> This process helps evaluate the range of possible outcomes of the MISO transmission costs for the project under the PPA terms.

- Scenario 1 – *EnergyForward* Resource Package without Nobles 2
- Scenario 2 – *EnergyForward* Resource Package with Nobles 2 base PPA pricing

<sup>9</sup> The 11 GWh of savings is per the Company’s recent CIP (Conservation Improvement Program) triennial plan. This represents a total of 57.6 GWh of total annual savings.

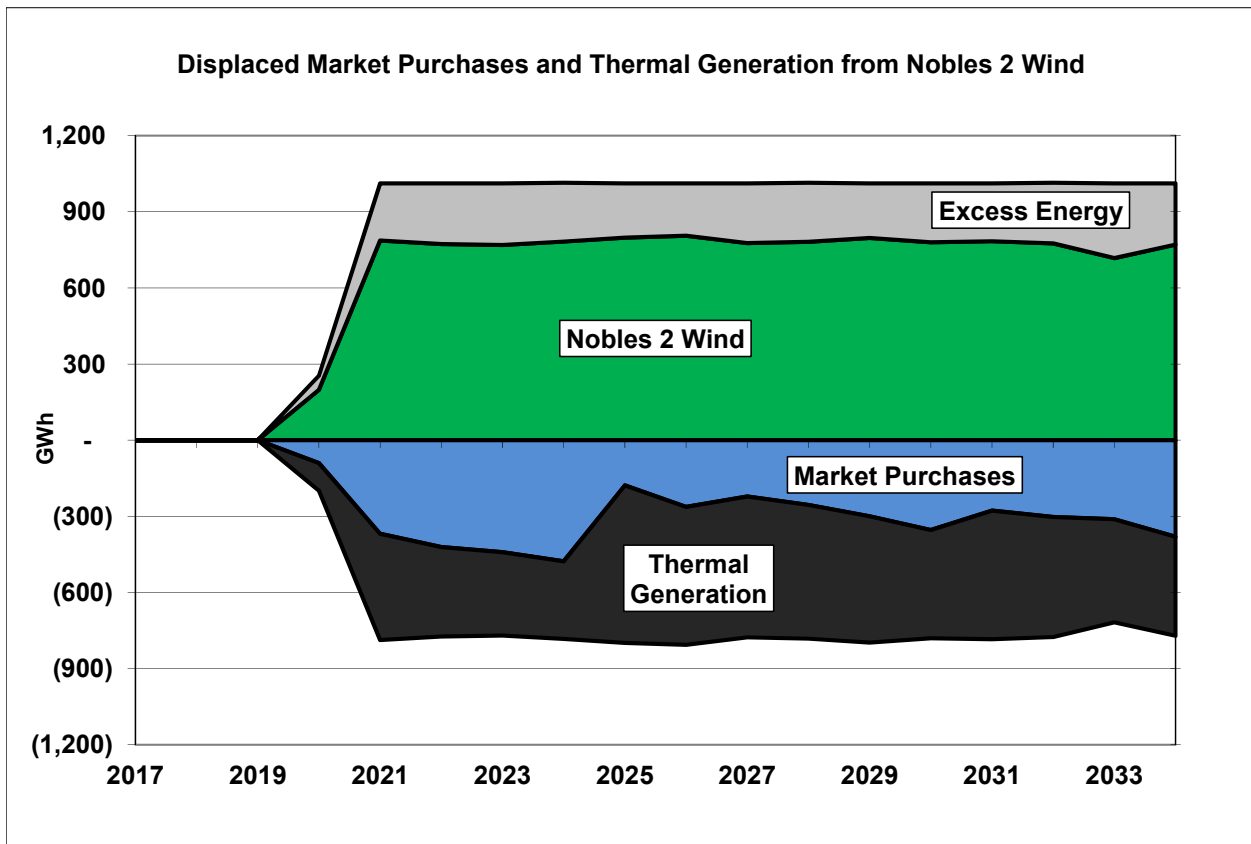
<sup>10</sup> Refer to Section IV.C.3 for the details of the transmission system network upgrade costs that are allowed to be passed through to Minnesota Power under the revised PPA terms.

- Scenario 3 – EnergyForward Resource Package with Nobles 2 base PPA pricing and transmission adder at the cost cap set for transmission system upgrades

The three scenarios are compared to each other to identify the power supply and cost impacts of adding the Project across the 10 futures to ensure a robust evaluation of the PPA was conducted for customers.

The 250 MW Nobles 2 Project is anticipated to increase the wind energy supply to Minnesota Power customers by over a 1,000 GWh per year. As this energy is added to the Minnesota Power energy portfolio, market energy purchases and existing thermal generation that were projected to serve customer load are displaced. Figure 4 shows the annual amount of market energy and thermal generation that is projected to be displaced over the first 15 years of the Project. Figure 3 demonstrates that on average, the Nobles 2 wind energy generated will displace a mix of approximately 324 GWh of market purchases and 452 GWh of existing thermal generation on average each year, with the remaining 233 GWh being excess energy transferred onto neighboring utility systems or the MISO market.

**Figure 4: Energy Displaced By the Nobles 2 Project**





The reduction in market purchases and thermal generation from the addition of emission-free energy to the power supply from Nobles 2 results in a reduction in emissions for Minnesota Power customers over the life of the Project. Table 2 below summarizes the average emissions that are estimated to be avoided annually with the Nobles 2 Project for CO<sub>2</sub>, sulfur dioxide (“SO<sub>2</sub>”), nitrogen oxides (“NO<sub>x</sub>”), and mercury (“Hg”), over the study period. Carbon dioxide is projected to see the greatest reduction with an average of 772,028 tons of CO<sub>2</sub> removed per year, positioning Minnesota Power well for Minnesota’s greenhouse gas reduction goal and potential future regulation on CO<sub>2</sub>.

**Table 2: Average Annual Avoided Emissions (2021-2034)**

<b>Effluent</b>	<b>Average Annual Reduction</b>
CO <sub>2</sub> (tons)	772,028
SO <sub>2</sub> (tons)	25
NO <sub>x</sub> (tons)	139
Hg (lbs.)	1.4

The resource planning evaluation conducted in Strategist identifies that adding the Nobles 2 Project will result in a significant decrease in power supply cost for Minnesota Power customers over the planning period. This is not an unexpected result, since the cost of the Nobles 2 PPA is lower than Minnesota Power’s current power supply costs. When the costs of the ten futures are compared with and without Nobles 2 (as shown in Table 3), the Nobles 2 Project causes an average decrease in customer power supply costs of \$179.7 million over the study period. The results among the 10 futures range from a decrease of \$86.2 million to a decrease of \$350.7 million over the study period, depending on the assumption for CO<sub>2</sub> regulation cost and externality costs. Overall, the addition of the Project decreases power supply costs in all ten futures across all 272 sensitivities considered.

**Table 3: Strategist Power Supply Cost Summary (\$2017, NPV 2017-2034)**

Power Supply Cost Comparison	Power Supply Cost without Nobles 2	Change in Cost with Nobles 2	Change in Cost with Nobles 2 + Transmission Cap
	(\$ in Millions, 2017 \$)		
Future 1	\$5,824.5	-\$90.8	-\$63.6
Future 2	\$5,834.2	-\$86.2	-\$59.0
Future 3	\$6,721.7	-\$189.3	-\$162.2
Future 4	\$6,734.5	-\$181.1	-\$154.0
Future 5	\$5,826.9	-\$91.5	-\$64.3
Future 6	\$5,836.5	-\$86.9	-\$59.7
Future 7	\$6,724.0	-\$190.1	-\$162.9
Future 8	\$6,736.9	-\$181.9	-\$154.7
Future 9	\$8,361.8	-\$350.7	-\$323.6
Future 10	\$8,361.8	-\$349.1	-\$322.0
<b>Average Decrease</b>		<b>-\$179.7</b>	<b>-\$152.6</b>

Cost impacts of adding Nobles 2 to Minnesota Powers’ energy portfolio across all the sensitivities and scenarios considered across the ten futures can be found in Appendix C.

The Nobles 2 Project will further Minnesota Power’s initiative towards reshaping its generation portfolio and obtaining additional carbon emission reduction as detailed in Minnesota Power’s *EnergyForward* strategy. This opportunity offers a well-positioned, geographically-diverse wind project located in Minnesota that will reduce emissions, continue Minnesota Power’s excellence with RES compliance, and take advantage of the federal PTCs while lowering the power supply costs for Minnesota Power customers.

### **C. Selection of the Nobles 2 Wind Project**

As previously noted, to comply with Order Point 9 of the July 2016 IRP Order, Minnesota Power issued an RFP on July 27, 2016, seeking power supply proposals for up to 300 MW of cost-effective wind resources that utilize the federal PTC, offer capacity that is accreditable under current MISO resource adequacy rules in MISO Local Resource Zone 1, and have an initial term of 20 years or longer. This request was part of the Company’s broader evaluation process that considered the costs and characteristics of different power supply types (e.g., wind, solar, natural gas, demand response, and distributed generation) to optimize the mix of resources to meet customer needs.

Independent evaluator Sedway Consulting monitored the RFP process and evaluated the proposals received. Sedway Consulting requested the Company provide as much information as possible prior to the receipt of proposals. This allowed Sedway Consulting to lock down and archive the basic evaluation parameters for the process. Such information included forecasts of regional market energy prices, cost of capital components, discount rate, and historical locational marginal pricing information. These assumptions were incorporated into Sedway Consulting's own evaluation model and formed the basis for independently assessing the benefits and costs of resources that were bid into Minnesota Power's solicitation.

The evaluation process entailed a general review of all proposals and the calculation and ranking of levelized energy prices for all proposed options. In instances where proposals were found to be non-compliant or incomplete, bidders were notified and given an opportunity to supplement their proposal materials. More effort was focused on the higher-ranked proposals, performing a thorough qualitative assessment of those proposals that appeared to have the best quantitative value for Minnesota Power's customers. Concurrent with that qualitative analysis, Sedway Consulting undertook the modeling of all proposals to assess their energy benefits; specifically, Sedway Consulting performed detailed modeling to determine each proposal's net cost. Although the levelized price ranking provided a good approximation of how project economics might compare, an assessment of the offers' generation profiles and the energy benefits associated with those profiles provided a comprehensive comparison.

The detailed economic evaluation, which is provided in Appendix B, entailed modeling the bids in Sedway Consulting's Renewable Bid Evaluation Model — a spreadsheet-based tool used to determine a proposal's net cost by calculating the present value of the project's costs and subtracting the present value of a proposed facility's hourly energy benefits. The costs in the net cost calculation included contract payments for delivered energy and an imputed debt cost for PPAs. Energy benefits were the product of the expected hourly generation of a facility and a forecast of hourly \$/MWh energy market prices over the term of the contract. Sedway Consulting's evaluation model normalized the net cost by dividing it by the present value of a project's expected energy deliveries, thereby yielding a \$/MWh levelized net cost. Minnesota Power received proposals that were clearly cost-effective, relative to expected energy market prices. This may be attributable to the fact that the current wind industry is in a highly-competitive phase and wind

turbine costs have been declining. In addition, the federal renewable PTC for wind projects will begin phasing out for any facilities that are not under construction prior to January 1, 2020, prompting developers to commence construction on wind projects, even at low prices.

In the fall of 2016, a key subset of the top-ranked projects were shortlisted. Negotiations commenced with the counterparties that proposed these projects and continued through the spring of 2017. One of those shortlisted projects was the Nobles 2 proposal. Sedway Consulting concurred with Minnesota Power's decision to make a final selection of that project and execute the original Nobles 2 Wind Project PPA. Further, the Strategist analysis filed on July 28, 2017 in the *EnergyForward* Resource Package petition supported the selection of the Nobles 2 Wind Project from the other shortlisted wind projects, reflecting the other shortlisted proposals had higher net costs and other attributes that made them less attractive for meeting Minnesota Power's resource needs. On May 10, 2017, the Company executed a PPA for the 250 MW Nobles 2 Wind Project. On July 20, 2017, the Company executed the First Amendment to the Nobles 2 Wind Project PPA.

In January 2018, after passage of federal tax reform under the TCJA, Minnesota Power received notice from Tenaska that they were seriously considering exercising their right to terminate the Nobles 2 PPA based on tax reform changes unless the Company agreed to revise pricing. The TCJA increases the costs of tax advantaged investments such as wind. Consequently, Minnesota Power re-entered into negotiations with Tenaska with the objective to come to mutually-agreeable terms that were beneficial for Minnesota Power customers. Minnesota Power and Tenaska were able to reach agreement on revised terms. The Amended and Restated PPA for the Nobles 2 Wind Project was signed on August 20, 2018. The revised PPA terms remain competitive with the wind projects still available today that were evaluated within the 2016 competitive RFP. Figure 5 below compares the revised Nobles 2 pricing to the pre-tax reform pricing received from competing wind projects still currently available in the RFP. Nobles 2 is still the economic choice for customers even though pricing of the competing offers have not been adjusted for tax reform. If an RFP were to be reissued, the new offers would likely be more costly due to tax reform, phasing of PTCs, and higher MISO interconnection costs, such that Nobles 2 would continue to be favorable in comparison as an economical project for customers.

**Figure 5: Price Competitiveness of the Nobles 2 Project**

[TRADE SECRET DATA EXCISED]

**D. Changes Since the Previous Filing**

There have been two noteworthy changes since the PPA was originally filed in July 2017 which have resulted in the delayed refiling of this PPA. First, as previously described, Minnesota Power renegotiated terms of the PPA due to impacts of federal tax reform under the TCJA.

Second, the Company learned that, due to a significant number of projects applying to interconnect to MISO, there has been a delay in MISO's interconnection study process. The Nobles 2 Project is in the MISO August 2016 West Area interconnection queue. The magnitude of projects applying during the August 2016 study period (amounting to approximately 5,600 MW) indicates that transmission upgrade costs could be significantly higher than initially anticipated. Because of this, the PPA was renegotiated to reflect [TRADE SECRET DATA EXCISED], with a cap included to limit customer risk.

As Minnesota Power was renegotiating the terms of the PPA to accommodate these changes, Tenaska approached the Company about becoming an equity investor in the project. As a result, a non-regulated subsidiary of ALLETE is finalizing an agreement with Tenaska on the terms on which the ALLETE subsidiary will make a minority equity investment in Nobles 2 Power Partners, LLC. The ALLETE subsidiary's role as an equity investor will be separate and distinct from Minnesota Power's role as the PPA offtaker.

Given the cost increases resulting from the TCJA and uncertain transmission upgrade costs, Minnesota Power considered restarting a new RFP process or asking the top bids from the initial RFP to update their pricing. The Company concluded, however, that the delay associated with initiating a second competitive bidding process at this stage would likely be a detriment to customers rather than a benefit. First, cost increases related to the TCJA affect the entire industry and are not unique to Nobles 2. Second, it is unlikely that a project with similar benefits to customers would emerge in the near future because Nobles 2 already qualifies for the 100 percent PTC, which has since been reduced for other new development to 80 percent and will reduce to 60 percent after January 2019. Therefore, any further delay related to a new competitive bidding

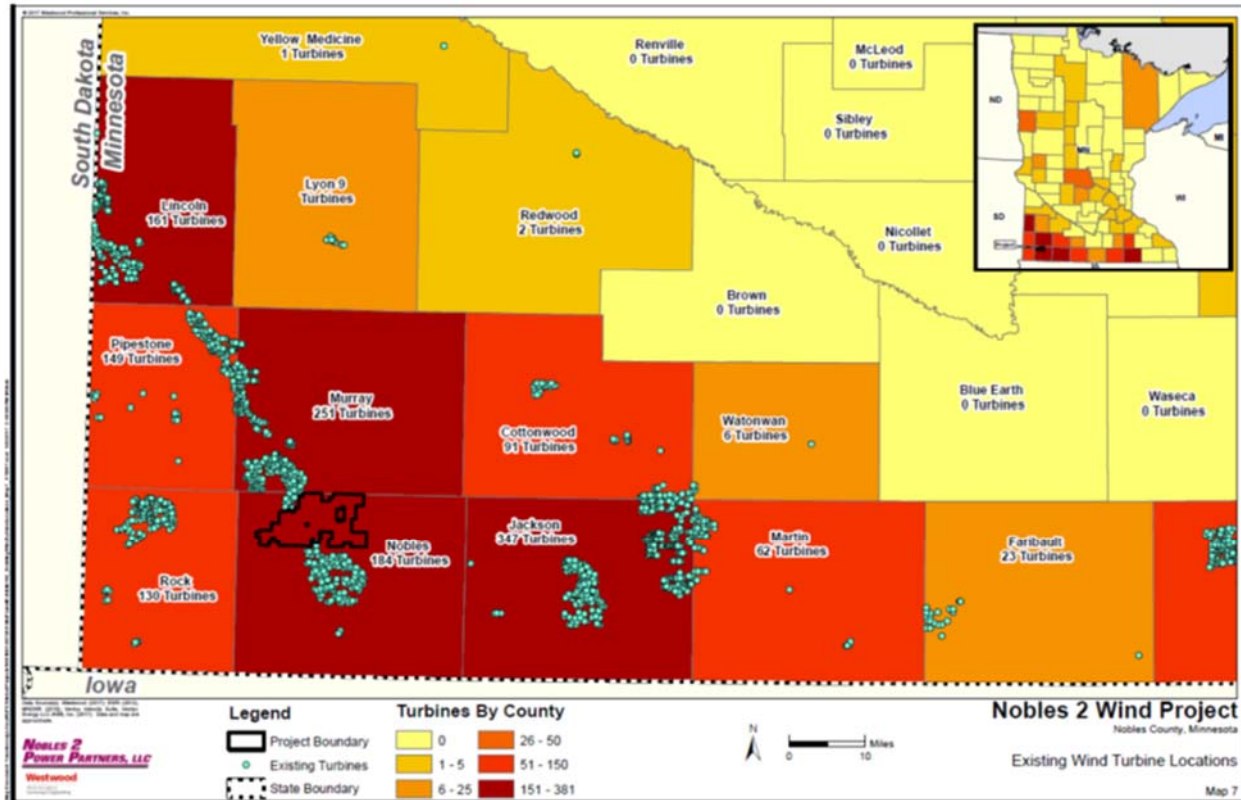
process would have a greater likelihood of creating cost and tax disadvantages, rather than benefits. Third, many of the competitive projects from the RFP are already being developed for other customers and are no longer available. Finally, Nobles 2 was selected in part due to the geographic diversity it brings to Minnesota Power's wind generation, and the uncertainty in transmission upgrade costs affect similarly situated projects within the MISO region. While potential transmission upgrade issues would be a factor in all cases, this project has less execution risk because it has advanced in development with land owners and through the Commission permitting process. The Tenaska's Certificate of Need and site permit application is well underway and described in Section IV.F.

#### **IV. THE NOBLES 2 WIND PROJECT AND PPA**

##### **A. Project Overview**

The Nobles 2 Wind Project will have a nameplate capacity of about 250 MW and is located in Nobles County in southwestern Minnesota. This area is home to Buffalo Ridge, a sixty-mile long expanse of rolling hills that stands about 2,000 feet above sea level. As shown in Figure 6 below, Nobles 2 is one of the few remaining areas along the Buffalo Ridge that has not yet been developed for wind production. The project location has excellent wind quality and adds beneficial geographic diversity to Minnesota Power's existing wind portfolio.

**Figure 6: Nobles 2 Location Relative to Other Wind Projects**



In the Department’s December 10, 2013, Response Comments in Docket No. E015/M-13-907 addressing Minnesota Power’s petition seeking approval of investments and expenditures related to the development of the Bison 4 Wind project, the Department highlighted the benefits of having a diversified portfolio of wind resources consisting of both owned facilities and PPAs. The Nobles 2 Wind Project provides geographically-diversity, as well as adds to the 98.6 MW of wind energy and capacity currently under PPA with NextEra Energy Resources from the Oliver I and Oliver II Wind facilities located near Center, North Dakota.

The Nobles 2 Wind Project is anticipated to begin commercial wind production by October 2020. Tenaska has site control for the Nobles 2 Wind Project and has submitted the required application to the Commission for a site permit as described in Section F in the following pages. It is anticipated that Vestas wind turbines will be used for the Nobles 2 Wind Project.

## **B. Interconnection and Transmission**

The Nobles 2 Wind Project will connect to Xcel Energy's Nobles-Fenton 115 kV transmission line. Tenaska has submitted a generator interconnection request with MISO for interconnection to the MISO system. The Nobles 2 Wind Project is part of MISO's August 2016 Definitive Planning Phase ("DPP") study group for the Western Area. The need for any transmission network upgrades will be determined through MISO's DPP study process, with final cost estimates currently scheduled to become available in April 2019. The availability of final cost estimates for transmission network upgrades is subject to change if additional delays occur in the DPP schedule. Final execution of the Nobles 2 Wind Project's Generation Interconnection Agreement ("GIA") with MISO is expected by September 2019, based on MISO's current schedule.

## **C. PPA Provisions**

The Nobles 2 Wind Project is an important component of the Company's larger *EnergyForward* Resource Package. Tenaska and Minnesota Power negotiated specific provisions into the PPA to protect the interests of their respective companies and customers. These provisions are mainly standard terms that would be included in a PPA of this scale. Certain terms exist within the PPA solely to address potential scenarios and events and allocate risk between parties in the limited circumstances in which they could occur. In the following paragraphs, the Company explains the PPA's significant terms. The full Nobles 2 Wind Project Amended and Restated PPA is provided in Appendix A.

### **1. Term of the Agreement**

Minnesota Power executed the Amended and Restated PPA with Tenaska on August 20, 2018. Subject to Commission approval and other contingencies, the term of the agreement begins once the project becomes commercially operational and expires at the end of 20 years. The Nobles 2 Wind Project is anticipated to begin commercial wind production by October 2020.

The PPA is subject to a number of contingencies, identified in Sections 1.2 and 1.3 of the PPA, which recognize that events beyond the parties' control could result in the need to cancel and



not proceed with the PPA. These contingencies take effect if the necessary permits and regulatory approvals are not received, [TRADE SECRET DATA EXCISED]. Lastly, Minnesota Power has the right to terminate the contract if the Energy*Forward* Resource Package (requested wind, solar and combined-cycle natural gas resources) does not receive regulatory approval.

## **2. Services Provided from the Agreement**

Pursuant to section 2.1.1 of the Nobles 2 Wind Project PPA, beginning with commercial operation, Tenaska is required to generate from the project, and sell the contract energy and creditable capacity to Minnesota Power at the prices set forth in the PPA. Tenaska will construct, own or lease, operate and maintain the Nobles 2 Wind Project in material compliance with all permits and requirements of law, applicable warranty requirements, relevant equipment manufacturer's specifications, and in accordance with standard industry practice.

## **3. Agreement Pricing**

Under the PPA, Minnesota Power will be purchasing the energy and capacity from the Nobles 2 Wind Project. As set forth in Exhibit B to the PPA, energy from the facility is priced at [TRADE SECRET DATA EXCISED]

## **4. Energy Curtailments**

[TRADE SECRET DATA EXCISED].

Tenaska may suspend energy deliveries due to Force Majeure under Article 10 of the PPA. This clause is standard in contracts of this type and generally allows performance to be suspended when unanticipated events, beyond the party's control, prevent a party from performing its obligations.

## **5. Environmental Attributes**

Minnesota Power is entitled to all Green Tags (which includes RECs) associated with the purchase of contract energy under Section 2.3 of the Nobles 2 Wind Project PPA. Under the PPA, Tenaska will assign to Minnesota Power all rights, title, and authority for Minnesota Power to

register, own, hold, and manage the Green Tags. The Renewable Energy Credits can be used by the Company to demonstrate compliance with the Minnesota Renewable Energy Standard.

## **6. Interconnection and Delivery**

Tenaska has applied for Network Resource Interconnection Service with MISO for the Nobles 2 Wind Project. Under the PPA, Minnesota Power is responsible for all electric losses, transmission and ancillary service arrangements, and costs required to deliver the energy and capacity from the Nobles 2 Wind Project to its customers.

## **7. Other Provisions of the Agreement**

Minnesota Power has the option to purchase the project after PTCs have expired, in [TRADE SECRET DATA EXCISED] of the PPA. The purchase would be at [TRADE SECRET DATA EXCISED] and would be subject to MPUC approval.

The following is a listing of standard provisions within the PPA:

- Article 6 contains typical provisions regarding operations and maintenance of the Nobles 2 Wind Project.
- Article 7 contains standard billing terms between the parties.
- Article 8 addresses the establishment of an operating committee designed to address issues that arise pursuant to the PPA.
- Article 9 addresses security provided by Tenaska to Minnesota Power for the project and that can be waived in part by Minnesota Power if an ALLETE non-regulated subsidiary is a minority investor in Nobles 2.
- Article 11 defines events of default and the termination of the PPA.
- Article 12 addresses indemnification.
- Article 13 addresses limitations of liability.
- Article 14 contains the standard arbitration clause used to address disputes between the parties of a PPA.
- Article 15 contains general terms and conditions standard in a PPA related to representations, warranties, and covenants.

All the terms outlined in this Section of the Petition are generally standard provisions in purchased power contracts.

**D. PPA Risk Factors**

Minnesota Power recognizes there are potential risks associated with the development and operation of the Nobles 2 Wind Project. It is Tenaska’s intention to construct and have the Nobles 2 Wind Project commercially operational by October, 2020. The following areas are intended to provide the Commission, the Department, and other stakeholders with a high-level understanding of the Company’s efforts to identify and manage issues related to this project. Minnesota Power has identified the key issues noted below that may impact the Nobles 2 Wind Project. These factors do not include general business risks that might impact any construction project, business operations, or other risks that might impact any business enterprise.

**E. Project Permitting and Regulatory Approval**

The Nobles 2 Wind Project requires construction-related permitting, generation interconnection, and regulatory approvals. Certain milestones have been established to ensure timely completion of the project, and that Tenaska can meet its obligation to supply energy and capacity by October 2020. Tenaska and Minnesota Power have negotiated terms to address failure by Tenaska to complete the project by the commercial operation milestone, or to complete any interim major milestone by the applicable date.

**F. Status of Tenaska’s Certificate of Need and Site Permit Application**

On October 13, 2017, Tenaska filed with the Commission applications for a certificate of need<sup>11</sup> and a site permit<sup>12</sup> for the Nobles 2 Wind Project. In a January 4, 2018 Order, the Commission accepted both applications as complete or substantially complete and requested that an administrative law judge (“ALJ”) from the Office of Administrative Hearings preside over a public hearing and prepare a summary of public comments on the site permit. Because a site permit cannot be issued prior to granting a certificate of need for the project, the Commission

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<sup>11</sup> Docket No. IP-6961/CN-16-289

<sup>12</sup> Docket No. IP-6961/WS-17-597

ordered a joint public hearing for these two dockets that was held on June 20, 2018 in Wilmont, Minnesota. At the public hearing, everyone who spoke was in favor of the project. On June 27, 2018, the Department recommended that the Commission issue a certificate of need for the project. The ALJ's report is scheduled to be submitted by August 24, 2018 and the Commission Staff has indicated the Commission agenda hearing would be this fall.

#### **G. Reliability and Delivery Curtailment**

Once Minnesota Power begins receiving energy under the PPA, the execution risk shifts from having the Nobles 2 Wind Project constructed to operating and maintaining the facilities in order to limit customer risks. Minnesota Power acknowledges that there remains a long-term risk, as is present with any PPA, of transmission outages and operational delays (e.g., weather related, maintenance, etc.) which could temporarily curtail delivery. The PPA addresses reliability through facility operations and maintenance and curtailment provisions.

The PPA contains sufficient provisions for reliable power to be delivered to Minnesota Power.

#### **H. Communication and Filing**

Minnesota Power recognizes the importance of on-going communication with the Commission, the Department, and other stakeholders following approval of the PPA until the Nobles 2 Wind Project is operational. Minnesota Power has identified three primary milestones where it would be important to communicate project updates to the Commission, Department, and other stakeholders. The first milestone is when Tenaska receives the required Certificate of Need and site permit from the Commission. The second milestone is when the GIA for the Nobles 2 Wind Project is executed with MISO. The third milestone will occur when the project is operational. Minnesota Power commits to informing the Commission, the Department, and other stakeholders in a timely manner about the achievement of these milestones. The Company will also inform the Commission of any significant project schedule changes that arise during implementation of the Nobles 2 Wind Project.

## V. THE AGREEMENT IS IN THE PUBLIC INTEREST

### A. The Pricing in the Agreement is Economic

The current favorable tax treatment of wind projects with the extension of the PTC creates an opportunity to procure low-cost wind resources for the benefit of customers. The PTC was extended on December 18, 2015, more than three months after Minnesota Power submitted its 2015 Plan, providing the full credit amount for a 10-year period to wind facilities that commence construction prior to January 1, 2017, and a phased reduction in the amount of the available credit for wind facilities that commence construction prior to January 1, 2020. Tenaska took the necessary action to qualify the Nobles 2 Wind Project for the full amount of the PTC; therefore, Minnesota Power's customers will benefit from availability of the full PTC amount through the low PPA price.

As described in Section III, Minnesota Power received a robust response to its wind RFP, including many competitive proposals. After evaluating the proposals and monitoring the subsequent negotiations, Sedway Consulting concluded that the 250 MW Nobles 2 Wind Project PPA represented the best resource for Minnesota Power's customers that was offered into Minnesota Power's 2016 Wind Resource RFP.

In the *EnergyForward* Resource Package petition, Minnesota Power analyzed three wind projects from the RFP that were located in three different states within MISO's Local Resource Zone 1. This allowed the Company to evaluate the benefits of procuring wind generation that is geographically-diverse from the nearly 600 MW of wind located in North Dakota. The analysis demonstrated that the lowest-cost plan for customers included 250 MW of new wind generation located in southwest Minnesota in 2020 and has the added benefit of being geographically-diverse from Minnesota Power's existing wind generation. It's important to note, the other two projects evaluated in this analysis have found other offtakers since the initial RFP.

As described in Section III, Minnesota Power updated its analysis using the revised pricing terms. Even with the increased pricing, the updated analysis continues to show the Nobles 2 Wind project is beneficial for customers and shows that adding geographically-diverse wind to Minnesota Power's existing wind profile provides benefits by delivering some wind generation during periods when there is no wind in North Dakota. The project benefits customers by reducing

power supply costs between \$86 million to \$351 million over the study period, depending on assumptions for CO<sub>2</sub> regulation cost and externality costs.

## **B. The Agreement Offers Favorable Terms**

The revised PPA with Nobles 2 provides a new resource that meets Minnesota Power's customers' needs and adds beneficial geographic diversity to the Company's existing wind portfolio, as well as the Company's overall resource portfolio. At the same time, Nobles 2 provides protections on behalf of customers prior to the start of the PPA and through the contract term. Under the PPA, customers will receive the energy, capacity, and renewable energy attributes from the Nobles 2 Wind Project at a defined price that takes advantage the 100 percent PTC benefit over the term of the agreement.

## VI. CONCLUSION

Minnesota Power believes that the Nobles 2 Wind Power PPA is in the public interest and respectfully requests that the Commission approve the Agreement. The Company also requests that the Commission confirm the PPA to be a reasonable and prudent way for Minnesota Power to continue to meet its obligations under Minnesota's Renewable Energy Standard in Minn. Stat § 216B.1691 and the July 2016 IRP Order.

The PPA is a key component of the Company's *EnergyForward* Resource initiative, which focuses on a fleet transformation toward an overall mix of two-third renewables plus renewable-enabling natural gas, and one-third compliant coal. The initiative will reduce emissions and increase renewable penetration without sacrificing cost competitiveness and the reliability of the Company's power supply. Implementation of the *EnergyForward* Resource Package arising out of the 2015 Plan will result in a resource mix of approximately 45 percent renewables (including hydroelectric) and more than a 40 percent reduction in greenhouse gas emissions by 2025 from 2005 levels.

Minnesota Power looks forward to working with the Commission, the Department, and interested stakeholders to implement the Nobles 2 Wind Power PPA.

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Respectfully submitted,



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