414 Nicollet Mall
Minneapolis, Minnesota 55401

PUBLIC DOCUMENTS
NOT-PUBLIC OR PROTECTED DATA EXCISED

December 21, 2018

–Via Electronic Filing–

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

RE: PETITION FOR APPROVAL OF THE ACQUISITION OF THE COMMUNITY WIND NORTH FACILITIES AND THE JEFFERS WIND FACILITY
DOCKET NOS. E002/M-10-734 AND E002/M-06-1234

Dear Mr. Wolf:

Northern States Power Company, doing business as Xcel Energy, submits to the Minnesota Public Utilities Commission the enclosed Petition for approval of the Company's agreement to acquire, own, and operate two 13.2 MW facilities (the Community Wind North Facilities) and the 44 MW Jeffers Wind Facility.

Portions of the enclosed Petition and Attachments D, E and F are marked "NOT-PUBLIC" as they contain information the Company considers to be trade secret data as defined by Minn. Stat. §13.37(1)(b). This data includes confidential pricing and other contract terms. The information has independent economic value from not being generally known to, and not being readily ascertainable by, other parties who could obtain economic value from its disclosure or use. We have marked additional information as "NOT PUBLIC" because the knowledge of such information in conjunction with public information in our Petition could also adversely impact future contract negotiations, potentially increasing costs for these services for our customers. Thus, the Company maintains this information as a trade secret.

Attachment A provided with the Not-Public version of this filing contains information classified as trade secret pursuant to Minn. Stat. §13.37 for the above-noted reasons and is marked as "NOT-PUBLIC" in its entirety. Pursuant to Minn. R. 7829.0500, subp. 3, the Company provides the following description of the excised material:

PUBLIC DOCUMENTS
NOT-PUBLIC OR PROTECTED DATA EXCISED

1. **Nature of the Material:** PDF copy of Option Agreement made and entered into between Minnesota Wind Holdings, LLC and Northern States Power Company.
2. **Authors:** The Option Agreement was prepared by Company and Minnesota Wind Holdings LLC legal personnel.
3. **Importance:** The Option Agreement contains competitively sensitive pricing and other contract terms.
4. **Date the Information was Prepared**: The Option Agreement was prepared October 2018.

We have electronically filed this document with the Minnesota Public Utilities Commission, and copies have been served on the parties on the attached service lists. Please contact Bria Shea at bria.e.shea@xcelenergy.com or (612) 330-6064 if you have any questions regarding this filing.

Sincerely,

/s/

AAKASH H. CHANDARANA
REGIONAL VICE PRESIDENT
RATES AND REGULATORY AFFAIRS

Enclosures
c: Service Lists

PUBLIC DOCUMENT – NOT-PUBLIC OR PROTECTED DATA EXCISED

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Nancy Lange	Chair
Dan Lipschultz	Vice-Chair
Matt Schuerger	Commissioner
Katie J. Sieben	Commissioner
John A. Tuma	Commissioner

IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY FOR APPROVAL OF THE ACQUISITION OF THE COMMUNITY WIND NORTH FACILITIES AND THE JEFFERS WIND FACILITY	DOCKET NOS. E002/M-10-734 AND E002/M-06-1234
	PETITION

INTRODUCTION

Northern States Power Company, doing business as Xcel Energy (Xcel Energy or the Company), submits this Petition to the Minnesota Public Utilities Commission for approval of the Company's agreement to acquire, own, and operate two 13.2 MW refurbished wind facilities (the Community Wind North Facilities)[1] and the 44 MW refurbished Jeffers Wind Facility.[2] The Community Wind North Facilities and Jeffers Wind Facility are currently owned by Longroad Energy (the Owner).

The Company originally entered into two Wind Generation Purchase Agreements (REPAs) with Community Wind North on May 28, 2010, and a separate REPA with Jeffers Wind 20, LLC on July 31, 2006. The terms of the REPAs are for 20 years, and will expire in October 2028 and May 2031. In early 2016, the Owner informed us that, in order to ensure successful operation for the duration of the REPAs and beyond, it would be undertaking a substantial project to refurbish the Community Wind North Facilities as well as the Jeffers Wind Facility.

Under the terms of the existing REPAs, so long as the refurbishment projects leave the facilities within the designated nameplate capacity, there is nothing precluding this refurbishment.

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[1] The Commission issued its Notice of Approval for Community Wind North on August 26, 2010. (*In the Matter of Northern States Power Company for Approval of Two Power Purchase Agreements with North Wind Turbines, LLC and North Community Turbines, LLC,* Docket No. E002/M-10-734).

[2] The Commission issued its Notice of Approval for Jeffers Wind on November 30, 2006 (*In the Matter of the Petition of Northern States Power Company for Approval of a Power Purchase Agreement with Jeffers Wind 20, LLC,* Docket No. E002/M-06-1234).

In connection with these refurbishment projects, the Company negotiated amendments to the REPAs that will lower the cost of energy purchased under the agreements. In the course of these negotiations, we recognized the Company could further benefit customers by purchasing, owning, and operating the refurbished facilities. As a result, the Company negotiated and exercised an option—subject to Commission approval—to acquire both the Community Wind North Facilities and the Jeffers Wind Facility and is negotiating purchase and sales agreements. This purchase provides customers with substantial value because it will result in cost-effective, beneficial energy prices for customers from efficient, refurbished renewable energy sources.

Xcel Energy respectfully requests the Commission to:

- Approve the Company's exercise of an option to purchase the Community Wind North Facilities and Jeffers Wind Facility; and
- Approve the Company's acquisition, ownership, and operation of the facilities pursuant to the terms of a negotiated purchase agreement.

I. SUMMARY OF FILING

A one-paragraph summary is attached to this filing pursuant to Minn. R. 7829.1300, subp. 1.

II. SERVICE ON OTHER PARTIES

Pursuant to Minn. R. 7829.1300, subp. 2, the Company has served a copy of this filing on the Office of the Attorney General – Residential Utilities and Antitrust Division. A summary of the filing has been served on all parties on the enclosed service list.

III. GENERAL FILING INFORMATION

Pursuant to Minn. R. 7829.1300, subp. 3, the Company provides the following information.

A. Name, Address, and Telephone Number of Utility

Northern States Power Company
414 Nicollet Mall
Minneapolis, MN 55401
(612) 330-5500

B. Name, Address, and Telephone Number of Utility Attorney

Ryan Long
Lead, Assistant General Counsel
Xcel Energy
414 Nicollet Mall – 401, 8th Floor
Minneapolis, MN 55401
(612) 215-4659

C. Date of Filing

Xcel Energy submits this Petition on December 21, 2018. No change in rates will occur until repowering of the projects is complete and acceptable delivery of energy from the refurbished projects begin, which is estimated to be December 31, 2019.

D. Statute Controlling Schedule for Processing the Filing

No specific statute controls the timeframe for this filing. The processing is therefore controlled by the Commission's rules on Miscellaneous Filings, Minn. R. 7829.1300 and 7829.1400. We have included the information required under Minn. R. 7829.1300, subp. 3 for miscellaneous filings that, like this one, are subject to specific content requirements.

The First Amendments to the Community Wind North REPAs and the Third Amendment to the Jeffers Wind REPA are the result of negotiations established as a result of Minn. Stat. § 216B.1645.

E. Utility Employee Responsible for Filing

Bria Shea
Director, Regulatory and Strategic Analysis
Xcel Energy
414 Nicollet Mall – 401, 7th Floor
Minneapolis, MN 55401
(612) 330-6064

IV. MISCELLANEOUS INFORMATION

Pursuant to Minn. R. 7829.0700, the Company requests that the following persons be placed on the Commission's official service list for this proceeding:

Ryan Long
Lead, Assistant General Counsel
Xcel Energy
414 Nicollet Mall – 401, 8th floor
Minneapolis, MN 55401
ryan.j.long@xcelenergy.com

Lynnette Sweet
Regulatory Administrator
Xcel Energy
414 Nicollet Mall – 401, 7th Floor
Minneapolis, MN 55401
regulatory.records@xcelenergy.com

Any information requests in this proceeding should be submitted to the Regulatory Records e-mail address above.

V. DESCRIPTION

Through this Petition, the Company is requesting Commission approval of the Company's acquisition, ownership, and operation of the Community Wind North Facilities and the Jeffers Wind Facility.

In the alternative, should the Commission not approve the Company's acquisition of the facilities, the Company is requesting Commission approval of the amendments to the Community Wind North Facilities and the Jeffers Wind Facility REPAs.

The Community Wind North Facilities are located in Lincoln County, Minnesota. The facilities, originally established as Community-Based Energy Development (C-BED) projects, consist of twelve 2.5 MW Clipper C-96 wind turbines and achieved commercial operation in May 2012.

Jeffers Wind is located in Cottonwood County, Minnesota. The facility, initially established as a C-BED project, consists of twenty 2.5 MW Clipper C-96 wind turbines and achieved commercial operation on October 10, 2008.

Although the C-BED statute was repealed in 2016 by the Minnesota Legislature, these REPAs were negotiated and approved during the time period when C-BED projects were given a statutory priority and public utilities were authorized to provide C-BED projects with favorable pricing compared to non-C-BED projects. The terms of the existing REPAs do not prohibit Community Wind North and Jeffers Wind from proceeding with a refurbishing project, and do not require amending the REPAs to do so. The Owner has indicated its intent to repower the facilities, which it estimates to be complete no later than the end of 2019.

The Company believes acquiring, owning, and operating the Community Wind North Facilities and the Jeffers Wind Facility following their refurbishment is prudent. The agreed-upon purchase price for the facilities offers system cost savings to our

customers over the lives of the repowered facilities in comparison to the terms of the REPAs. The addition of the refurbished facilities also will enable the Company to continue to improve environmental performance in a cost-effective manner and meet or exceed compliance with Minnesota's Renewable Energy Standard and Minnesota's overarching goal of an 80 percent reduction in carbon emissions by 2050.

VI. BACKGROUND

This section provides background information on the history of the Community Wind North Facilities and the Jeffers Wind Facility, generally, and on the repowering proposal for the facilities specifically.

A. Community Wind North Facilities

The Community Wind North Facilities are located in Lincoln County, Minnesota. The facilities initially were established as C-BED projects and consist of twelve 2.5 MW Clipper C-96 wind turbines.

The Community Wind North REPAs were the direct result of the Commission's March 11, 2003, Order which granted a certificate of need for the development of the Southwest Minnesota Transmission project. As part of that proceeding, the Company made a commitment to develop 60 MW of locally-owned wind generation on the Buffalo Ridge. Community Wind North and the Company made several attempts to develop projects over the subsequent years but those efforts were stymied due to transmission interconnection requirements and cost allocation issues proposed by the Midwest Independent Transmission System Operators (MISO).

On March 30, 2007, and April 3, 2007, the Company entered into separate power purchase agreements with North Community Turbines and North Wind Cooperative (collectively Community Wind North). Those power purchase agreements were submitted to the Commission as partial fulfillment of the March 2003 Order, but they were not acted upon at the request of Community Wind North. Community Wind North was unable to proceed with construction due to the backlog of other projects in the queue that were waiting for the completion of an interconnection study by MISO. Community Wind North and the Company signed a letter of termination for the 2007 PPAs on June 10, 2010.

Subsequently, and based in part on Commission guidance, the Company and Community Wind North entered into new power purchase agreements (the REPAs) that were structured to address cost recovery of contingent transmission system upgrade costs that may ultimately have been allocated to Community Wind North by

MISO. The new REPAs were executed on May 28, 2010, and the Company submitted a Petition for their approval on June 30, 2010. The Commission issued its Order approving the Petition on August 26, 2010.

In early 2014, Community Wind North informed the Company of its intent to sell the facilities to a subsidiary of NRG Energy, Inc. This change of control did not affect the projects' status as C-BED projects.

On July 8, 2017, NRG sold the Community Wind North Facilities to the current Owner, Longroad Energy.

B. Jeffers Wind Facility

The Jeffers Wind facility is located in Cottonwood County, Minnesota. The facility initially was established as a C-BED project and consists of twenty 2.5 MW Clipper C-96 wind turbines.

Xcel Energy's REPA for Jeffers Wind was negotiated in the wake of the 2005 C-BED legislation designed to further wind development in the state by adopting a set of local ownership criteria and pricing guidelines. At that time, Minn. Stat. §216B.1612 directed the pricing structure of C-BED PPAs to be front-loaded for the first half of a contract's term. By law, all Minnesota utilities were to offer a C-BED tariff for Commission approval, and, in an Order dated May 3, 2006, in Docket No. E002/M-05-1887, Xcel Energy's C-BED tariff was approved.

To emphasize the importance state leaders placed on additional development of renewable energy resources, Governor Tim Pawlenty announced a statewide goal of 800 MW of community-based wind by 2010. The Jeffers Wind project was the second of several C-BED contracts Xcel Energy negotiated and executed in conjunction with the state's C-BED goals.

The Company submitted its Petition for approval of the Jeffers Wind REPA on August 30, 2006. In response to comments submitted by the Minnesota Department of Commerce, the Company, on October 24, 2006, submitted the First Amendment to the REPA to make minor modification to three contract provisions.[3] The Commission issued its Order approving the REPA, as revised by the First Amendment, on November 30, 2006. The facility achieved commercial operation on October 10, 2008.

[3] (1) Clarification of the proposed payments per MWh for curtailment, (2) Interest charges for network updates paid to the Seller over a period of less than five years, and (3) A three-month extension of the commercial operate date from March 31, 2007 to June 30, 2007.

As with Community Wind North, in early 2014, Jeffers Wind informed the Company of its intent to sell the project to a subsidiary of NRG, which did not affect the project's status as a C-BED project. On July 8, 2017, NRG sold the facility to the current Owner.

C. Repowering Project Overview

In early 2016, the Owner informed the Company of its intent to refurbish components of both the Community Wind North and Jeffers Wind Facilities, which, consequently, will re-qualify for Production Tax Credits (PTCs). As a part of the refurbishing, the Owner will be installing smaller, more efficient 2.2 MW Vestas wind turbines (compared to the current 2.5 MW turbines), which will reduce the nameplate capacity of the Community Wind North Facilities to 26.4 MW and the Jeffers Wind Facility to 44 MW. Additionally, in conjunction with refurbishing, the Owner will install Automated Generation Control (AGC) technology, and the facilities will become dispatchable resources.

Under the terms of the existing REPAs for Community Wind North, the Owner is required to maintain the wind farm for the entire 20 year term of the REPAs. Section 4.1(d) of the REPAs requires the Owner at its sole expense to operate, maintain and repair the facility according to "Prudent Electric Industry Practice," which, as defined in the REPAs, includes comporting with commonly used and accepted safety, dependability, and efficiency methods and practices, including the requirements of the National Electrical Code, NERC standards and procedures, and other applicable law.

Similarly, under the terms of the existing REPA for Jeffers Wind, the Owner is required to maintain the wind farm for the entire 20 year term of the REPA. Section 3.3 of the REPA requires the Owner to maintain the facility according to "Good Utility Practices," which, as defined in the REPA, includes taking reasonable steps to perform preventive, routine, and non-routine maintenance and repairs to ensure reliable, long-term, and safe operation.

Section 10.9 of the Jeffers REPA requires Jeffers to meet a Peak Production Availability requirement and use commercially reasonable efforts to maximize the amount of net energy produced as well as minimize forced outages. If Jeffers Wind fails to meet the Peak Production Availability requirement or fails, after the 24th full month of commercial operations, to deliver more than 85 percent of the committed renewable energy from the facility, Jeffers Wind will have defaulted under the terms of Section 12.1(D) of the REPA.

Nothing in the REPAs, however, precludes the Owner from refurbishing the Community Wind North and Jeffers Wind Facilities to continue meeting its contractual requirements.

VII. DESCRIPTION OF OPTION TO PURCHASE FACILITIES

On October 8, 2018, the Company and Minnesota Wind Holdings, LLC, a limited liability company and subsidiary of NRG that indirectly owns 99 percent of the outstanding membership interests in Community Wind North and Jeffers Wind 20, LLC, executed an Option Agreement granting the Company the option to purchase the Community Wind North Facilities as well as the Jeffers Wind Facility. A copy of the Option Agreement is included as Attachment A. The Option Agreement is Not-Public and has been removed from the Public version of this Petition. The Option Agreement states that the Company may exercise the option by delivering a Preliminary Exercise Notice at any time during the Option Exercise Period, which is the period commencing on execution of the Option to Purchase Agreement and ending on the earlier of (1) termination of the Option, (2) delivery of the Preliminary Exercise Notice, or (3) October 15, 2018. The purchase price to be paid by the Company is *[Protected Data Begins Protected Data Ends]*. The Company's obligations under the Option Agreement are conditioned upon the Commission's approval of the transaction.

On October 15, 2018, the Company exercised its option to purchase by delivering a copy of the Preliminary Option Exercise Notice to Minnesota Wind Holdings, LLC. A copy of the Preliminary Option Exercise Notice is included as Attachment B. On November 14, 2018, the Company confirmed its exercise of the option to purchase by delivering an Option Confirmation Notice to Minnesota Wind Holdings, LLC. A copy of the Option Confirmation Notice is included as Attachment C.

Specific terms of the Company's acquisition of the Community Wind North and Jeffers Wind facilities currently are being negotiated. The closing of the purchase and sale is anticipated to occur on or about the Commercial Operation Date (COD) for the refurbished facilities. Section 4.3 of the Option Agreement, however, sets forth a number of provisions that will be included in any purchase and sale agreement for these facilities, including, but not limited to, *[Protected Data Begins*

Protected Data Ends]. We will provide a supplemental filing with the final purchase and sale terms once finalized.

VIII. DESCRIPTION OF AMENDMENTS TO REPAS

Should the Commission not approve the Company's acquisition of both the Community Wind North and Jeffers Wind facilities, Xcel Energy seeks approval of First Amendments to the Community Wind North REPAs and a Third Amendment to the Jeffers Wind REPA, which we provide as Attachments D, E, and F respectively. Certain provisions of the Amendments are Not-Public and have been redacted in the Public version of this Petition.

We propose to continue recovering the costs of these projects pursuant to Minn. Stat. § 216B.1645 through the Fuel Cost Charge of the Fuel Clause Rider, consistent with the recovery method for wind generation projects that satisfy the legislative requirements of Minn. Stat. §216B.1691, subd. 2.

This section of our Petition provides a summary of relevant terms of the proposed amendments to the REPAs, and our proposed use of Fuel Clause Rider to recover the cost of purchases under the amended REPAs.

A. Terms of Amended Community Wind North and Jeffers REPAs

1. Purchase Price

As a result of refurbishing, Community Wind North and Jeffers Wind will relinquish their status as C-BED projects, and, consequently, price adjustments are warranted. Xcel Energy will purchase the Committed Energy Volume from Community Wind North over the remaining 12.5 years of the contract term at a price of ***[Protected Data Begins Protected Data Ends]***, which compares favorably to the current price of ***[Protected Data Begins Protected Data Ends]***. Xcel Energy will purchase actual output from Jeffers Wind up to the Committed Renewable Energy volume over the remaining 10 years of the contract term at a price of ***[Protected Data Begins Protected Data Ends]***, which compares favorably to the current price of ***[Protected Data Begins Protected Data Ends]***. The Company may purchase any energy in excess of the Committed Energy amount at the MISO Day-Ahead price at the project nodes NSP.CWN2 and NSP.jeffers2.

Under the terms of the refurbishing project, Community Wind North's retrofit will result in a new Committed Nameplate Capacity of 13.2 MW for each project (North Wind Turbines and North Community Turbines) and a new Committed Renewable Energy volume of 50,000 MWh per year for each project. Historically, North Wind Turbines has averaged about 49,700 MWh annually since 2012, and has achieved a

one-year maximum output of 53,057 MWh. North Community Turbines has averaged about 49,700 MWh annually since 2012, and has achieved a one-year maximum output of 52,983 MWh. Similarly, Jeffers Wind has agreed to a new Committed Renewable Energy volume of 175,300 MWh per year. This is a reduction from the current volume of 184,000 MWh per year, and historically, Jeffers Wind has averaged 164,200 MWh per year, and achieved a one-year maximum output of 174,721 MWh per year.

Given that Community Wind North and Jeffers Wind have agreed to a committed volume at a reduced price, it is anticipated that annual energy costs for the remaining term of the agreement will not be greater as a result of the retrofitting project compared to current terms and pricing.

We will receive the Renewable Energy Credits (RECs) for committed energy, and Community Wind North and Jeffers Wind will retain the RECs associated with any excess energy production.

2. Commercial Operation Date

The proposed COD for the repowering projects is no later than December 31, 2019.

3. Term

The original 20-year Community Wind North REPAs are scheduled to terminate May 17, 2031. The original Jeffers Wind REPAs are scheduled to terminate October 9, 2028. The amendments to the REPAs do not extend the project term.

4. Security

As required by the initial REPAs, Community Wind North was required to establish and maintain a Security Fund either through an irrevocable standby letter of credit or by establishing an interest-bearing escrow account in the amount of ***[Protected Data Begins Protected Data Ends]***. Jeffers Wind, similarly, was required to establish and maintain a Security Fund through one of the following methods: (1) by letter of credit; (2) through an escrow account of the entire amount; or (3) by escrow account in the amount of ***[Protected Data Begins Protected Data Ends]*** with deposits being built up until the agreed-to amount is reached. The amendments make no revisions to the Security Fund provisions of the REPAs.

5. Transmission and Curtailment

The REPAs include provisions under which the Company will pay for transmission-related curtailment due to lack of available transmission capacity, lack of transmission service, and low load conditions requiring curtailment for system stability or transmission loading relief implemented under the Open Access Transmission Tariff (OATT). Curtailment for these projects has been minimal. In the event any wind curtailment occurs, the incremental cost above the energy purchase cost would be approximately ***[Protected Data Begins Protected Data Ends]***.[4] The amendments make no revisions to the Curtailment provisions of the REPAs.

6. Effect of First Amendments on Xcel Energy Revenue

The Community Wind North REPAs are expected to result in energy expenditures of approximately ***[Protected Data Begins Protected Data Ends]*** over the remaining term of the project. The Jeffers Wind REPA is expected to result in energy expenditures of approximately ***[Protected Data Begins Protected Data Ends]*** over the remaining term of the project. Pursuant to Minn. Stat. §216B.1645, the Minnesota portion of these energy costs will be recovered through the Fuel Cost Charge of the Fuel Clause Rider.

No net increase in net income to Xcel Energy will result from this amendment, as the Minnesota costs of the power purchase will equal the Minnesota revenue collected.

B. Proposed Use of Fuel Clause Riders to Recover the Cost of the Purchases

The Company intends to count power purchases under the amended REPAs toward the legislative requirements of Minn. Stat. §216B.1691 subd. 2, and upon approval, costs incurred in connection with the REPAs will be recoverable consistent with Minn. Stat. §216B.1645. As with other Company wind generation purchases, costs for these purchases are priced entirely on an energy basis. Consistent with the purchases from other wind projects, we seek approval to recover these costs pursuant to Minn. Stat. §216B.1645 through the Fuel Cost Charge of the Fuel Clause Rider.

This recovery method is the same as that set forth in other PPA agreements for wind generation projects that satisfy the legislative requirements of Minn. Stat. § 216B.1691 subd. 2.[5]

[4] This incremental cost assumes Community Wind North claims the Minnesota tax rate for their PTCs.
[5] Except for those proposed in the Windsource program (Docket No. E002/M-01-1479).

IX. ECONOMIC ANALYSIS

To evaluate the impact on our customers of the proposed wind projects, we used the Strategist resource planning model. The Strategist planning model simulates the operation of the NSP System and estimates the cost to serve load through the life of the projects. We use the model to test results under a range of input assumptions. To assess impact on customer costs, we simulated the operation of the NSP System through 2057, by comparing the PPA repowering impacts and the acquisition of the Community Wind North Facilities and the Jeffers Wind Facility to the continuation of the existing PPAs. Since the option agreement is for the purchase of both projects, the impacts are evaluated on a combined basis. All of our analyses assume the addition of the 1,850 MWs of wind generation approved by the Commission in Docket Nos. E002/M-16-777 and E002/M-17-694 and the Dakota Range III resource proposed in Docket No. E002/M-18-765.

As discussed in our recent wind acquisition petitions, we note that wind generation has no fuel costs, so the marginal cost to produce the next unit of energy is zero. In other words, after capital and on-going O&M costs are accounted for, it costs a wind generator nothing to produce the next MWh of energy. As a result, MISO generally provides for wind production ahead of other, higher marginally-priced generation, such as gas- and coal-based generation. Consequently, as more wind generation is integrated into the system, coal- and gas-fired thermal generation is dispatched less often. When the energy from the proposed projects is produced, it will displace energy production from other Company resources or purchased energy from the MISO market. This displacement of other generation or market purchases largely drives the benefits shown in our modeling results. Below we highlight some of the key assumptions included in the modeling. Further details on the Strategist assumptions are included in Attachment G.

Key Assumptions:

- *Nuclear* – The nuclear units are assumed to retire when the current operating licenses expire. The current license for Monticello expires in 2030. The licenses for Prairie Island I and II expire in 2033 and 2034, respectively.
- *Coal* – As approved by the Commission in our last resource plan, Sherco Unit 2 is assumed to retire in 2023 and Sherco Unit 1 is assumed to retire in 2026. The A.S. King Plant and Sherco Unit 3 are assumed to run through their existing lives of 2037 and 2040, respectively.
- *Combined Cycle Plants* – A combined cycle unit is assumed to be added at the Sherco site in 2027. MEC is assumed to be Company-owned.
- *PPAs* – The Manitoba Hydro, Cottage Grove, and Cannon Falls PPAs are assumed to expire at the end of their current PPA terms.

- *Energy Efficiency* – The load forecast includes an assumption of 1.5 percent annual energy savings.
- *Demand Response* – In compliance with the Commission's Order in our last resource plan, 400 MWs of incremental demand response is added by 2023.
- *Distributed Solar* – The modeling assumes distributed generation (DG) solar additions based on our most recent forecast of distributed solar, which includes 673 MWs of Community Solar Gardens by 2020.
- *Universal Scale Solar* – In addition to the DG solar, an incremental 1400 MWs of universal scale solar is added by 2030.
- *Congestion* – We updated our congestion assumption since our last wind acquisition filing by using the MISO MTEP 2018 models and comparing the average congestion costs between representative wind bus locations and NSP. We included a congestion cost of $3.43 per MWh in 2020, escalating at two percent per year.
- *Curtailment* – We used the same assumptions regarding curtailment that we used in the analysis of our last wind acquisition. In Strategist modeling, dump energy represents the amount of excess energy that could not be utilized by the dispatch simulation. The market limit we rely on is based on historical data of market sales. This conservative assumption results in curtailment of approximately 5.6 percent of wind generation on our system.

1. Strategist Modeling

As noted above, we evaluated the proposed wind projects assuming the addition of the 1,850 MWs of wind previously approved by the Commission, the proposed Dakota Range III resource, DG solar additions based on our most recent forecast of distributed solar, and over 1,400 MWs of additional universal scale solar. Therefore, the results of the Strategist analysis provide the incremental effect of the Community Wind North Facilities and the Jeffers Wind Facility repowering and acquisition. The results of the Strategist analysis show that these new wind resources will result in net savings for our customers under all sensitivity tests conducted. Table 1, below, shows both the present value of societal costs (PVSC) and present value of revenue requirement (PVRR) savings. The base PVSC assumptions include the high regulated cost for each ton of CO_2 emitted in 2024, escalating at two percent per year thereafter, as well as high externality costs for emissions of criteria pollutants and CO_2 before 2024. The PVRR savings do not include CO_2 costs or other externality costs and do not include Surplus Capacity Credit.

Table 1: Jeffers and Community Wind North Repower
Incremental PVSC and PVRR Savings from Reference Case
($ millions)

	Amended REPAs	Acquisition
PVSC (High Ext Costs thru 2024, High Reg Costs)	(4.8)	(32.0)
PVSC + Low Gas	(4.3)	(17.4)
PVSC + High Gas	(5.4)	(52.9)
PVSC + Low Load	(4.7)	(29.1)
PVSC + High Load	(5.8)	(36.5)
PVSC + Mkts Off, No Dump Credit	(4.5)	(35.6)
PVSC + Mkts Off, Dump Credit	(5.4)	(40.6)
PVSC - Low Ext Costs All Years	(2.4)	(14.7)
PVSC - High Ext Costs All Years	(5.3)	(31.8)
PVSC - Low Ext Costs thru 2024, Low Reg Costs	(2.4)	(16.6)
PVRR (No CO_2)	(1.7)	(6.9)

The proposed repower and acquisition provides benefits under all scenarios, in comparison to both the existing REPAs and proposed amended REPAs. The Amended REPAs Scenario compares the impacts of the terms of the amended REPAs, which includes a reduced price and production cap, to the existing REPAs. The Jeffers Wind REPA is assumed to expire in 2028 and the Community Wind North REPAs are assumed to expire in 2031. Under the acquisition scenario, the repowered wind resources are assumed to operate for 25 years.

As we continue to transition our fleet to include more renewables and less coal generation, there will be periods of time where the generation on our system exceeds our native load serving requirement. During these periods, we are likely to make energy sales into the MISO market. Revenues from those sales will be credited to customers through the monthly fuel clause adjustment. Assumptions regarding the likely value of these potential sales are an important factor in predicting the likely rate impact of the proposed wind portfolio. Therefore, we have analyzed the benefits of the Community Wind North Facilities and the Jeffers Wind Facility repowering under three different energy market assumptions. First, interactions with the MISO energy market are modeled under the base assumptions. Second, under the "markets off, no dump credit" sensitivity, market interactions are turned off and no value is given to any generation in excess of load serving requirements. Third, under the "markets off, dump energy credit sensitivity," energy in excess of load serving requirement is given half of the forecasted market energy price.

In addition to the sensitivities related to market interactions, Table 1 includes sensitivities for Gas Prices, Forecasted Load, and Carbon Costs.

- Gas Prices

Our gas price forecast is based on a blend of the latest market information and long-term fundamental-based forecasts acquired from third parties. We have included a low and high gas sensitivity to evaluate the impacts of variations in gas prices on the proposed transfer of ownership.

- Forecasted Load

The modeling includes the most recent load forecast, which was developed in the fall of 2018. The high and low load sensitives were developed by increasing and decreasing forecasted load one standard deviation from the median forecast.

- Cost of Carbon

As noted above, the base PVSC assumptions include the high externality costs through 2024 and the high regulatory costs in 2025 and beyond, as approved by the Commission in its June 11, 2018, *Order*.[6] The Commission's *Order* also required that:

> In all electricity generation resource acquisition proceedings during 2018 and 2019, utilities shall analyze potential resources under a range of assumptions about environmental values, including scenarios that—
>
> A. Incorporate, for all years, the low end of the range of environmental costs for carbon dioxide as approved by the Commission in its January 3, 2018 Order Updating Environmental Costs in Docket No. E999/CI-14-643, *In the Matter of the Further Investigation into Environmental and Socioeconomic Costs Under Minnesota Statutes Section 216B.2422, Subdivision 3*.
>
> B. Incorporate, for all years, the high end of the range of environmental costs for CO_2 as approved by the Commission in its January 3, 2018 Order.
>
> C. Incorporate the low end of the range of environmental costs for CO_2 but substituting, for planning years after 2024, the low end of the range of regulatory costs for CO_2 regulations, in lieu of environmental costs.

[6] ORDER ESTABLISHING 2018 AND 2019 ESTIMATE OF FUTURE CARBON DIOXIDE REGULATION COSTS, Docket Nos. E999/CI-07-1199 and E999/DI-17-53.

D. Incorporate the high end of the range of environmental costs for CO2 but substituting, for planning years after 2024, the high end of the range of regulatory costs for CO_2 regulations, in lieu of environmental costs.

We have included sensitivities to comply with the Commission's Order.

2. Annual Impacts

To understand how the costs (savings) change over time, Figure 1 below visually portrays the annual costs (savings) impacts of the amended REPAs as compared to the existing REPAs.

Figure 1: Annual Costs (Savings) Compared to Existing REPAs

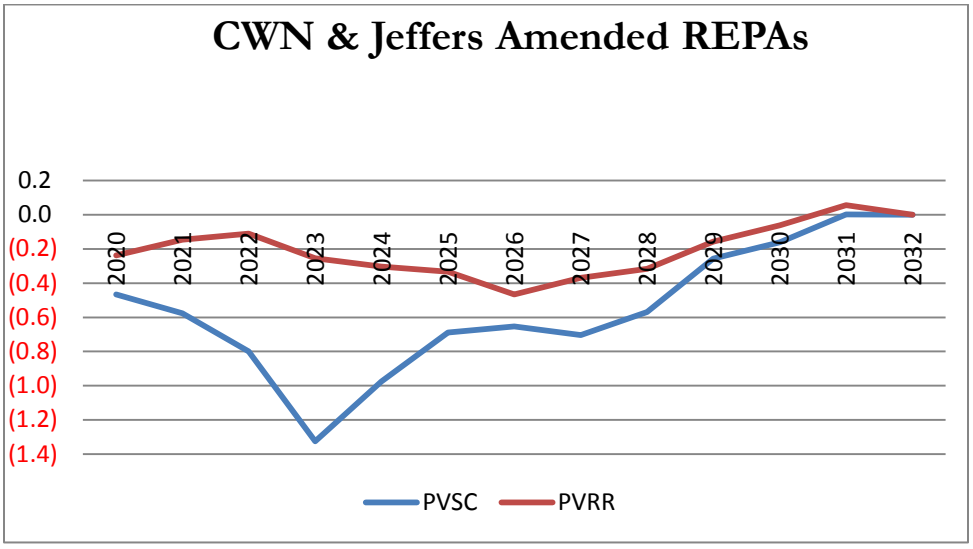
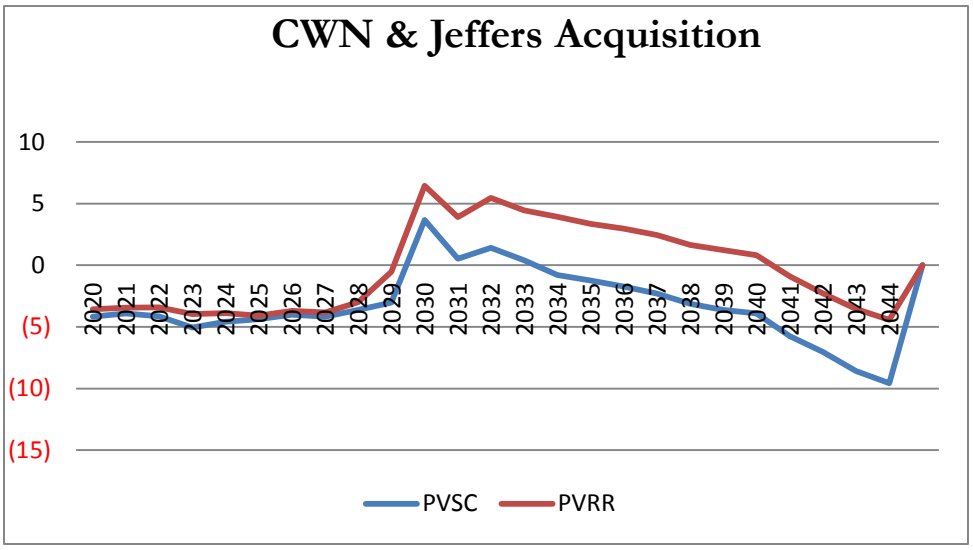


Figure 2 below visually portrays the annual costs (savings) impacts of the acquisition of Jeffers Wind and Community Wind North as compared to the existing REPAs.

Figure 2: Annual Costs (Savings) Compared to Existing REPAs



Figures 1 and 2 show the annual cost impacts beginning in 2020, the first full year of the repowered projects. It is important to note that the PVSC assumptions savings in Figures 1 and 2 incorporate the high end of the range of the Commission-approved environmental costs for CO_2 but substituting, for planning years after 2024, the high end of the range of regulatory costs for CO_2 regulations, in lieu of environmental costs for CO_2. PVRR savings shown in Figures 1 and 2 assume we are able to take advantage of the MISO energy market to make energy purchases and sales. Consistent with the analysis performed for our most recent wind acquisitions, we included a limit on the maximum amount of market sales based on historical data. Due to this limit on market sales, a significant amount of the incremental wind generation is "dumped" and does not receive any value.

While we have used the same limit in the past, this assumption is likely overly conservative. MISO expects the Zone 1 export limit to increase by approximately 2,500 MWs for the 2019-2020 planning year due to additional transmission lines going into service. Consequently, we expect less dump energy than we have included in the modeling, which will result in more benefits than shown in Figures 1 and 2. We will continue to evaluate changes to the limit on market transactions in future filings. As the Company will take advantage of MISO energy market transactions when in the interest of our customers, we believe modeling the availability of the MISO energy market is an appropriate indicator of the likely impacts to customers of the wind resource addition. We also note that we have included wind integration costs and coal cycling costs as shown in Attachment G.

We expect customer costs to decrease in the near-term under either scenario. Savings are greater in the near-term under the acquisition scenario, but increase once the PTC savings expire.

X. PUBLIC INTEREST

Although we believe the purchase option of these wind facilities will provide greater benefits to customers than the amendments to the REPAs, both proposals are in the public interest, reasonable and protect the interests of customers in several ways:

1. The Projects are Reasonable

- The projects will improve the efficiency of existing wind facilities;
- The purchase price under the Option Agreement will provide savings for our customers compared to the existing REPAs pricing; and
- Although not as beneficial as the Option Agreement, the price of energy under the Amendment to the REPAs will provide savings for our customers compared to the existing pricing.

2. The Projects are in the Public Interest

- Repowering allows the Company to continue to include the projects as a component of our renewable generation portfolio that serves the long-term, best interests of our customers; and

- Repowering will help ensure that the projects meet their contractual obligation to provide renewable energy to our customers for the full 20-year term of the PPAs.

3. Customers are Protected

- The purchase and sale agreements being negotiated by the Company will include provisions to protect the interests of customers, including warranties on the refurbished turbines being installed.

- The REPAs have been structured to protect the interests of customers through several safeguards contained in the agreement between the Company and other parties. The REPA Amendments make no revisions to these provisions.

CONCLUSION

The proposed purchase of the Community Wind North Facilities and the Jeffers Wind Facility provides customers with substantial value because it will result in cost-effective, beneficial energy prices for customers from efficient, refurbished renewable energy sources. Xcel Energy respectfully requests the Commission to approve the Company's acquisition, ownership, and operation of the wind facilities pursuant to the terms of a negotiated purchase agreement.

Dated: December 21, 2018

Northern States Power Company

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Nancy Lange	Chair
Dan Lipschultz	Vice-Chair
Matt Schuerger	Commissioner
Katie J. Sieben	Commissioner
John A. Tuma	Commissioner

IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY FOR APPROVAL OF THE ACQUISITION OF THE COMMUNITY WIND NORTH FACILITIES AND THE JEFFERS WIND FACILITY	DOCKET NOS. E002/M-10-734 AND E002/M-06-1234 PETITION

SUMMARY OF FILING

Please take notice that on December 21, 2018, Northern States Power Company, doing business as Xcel Energy, filed with the Minnesota Public Utilities Commission a Petition for approval of the Company's agreement to acquire, own, and operate two 13.2 MW facilities (the Community Wind North Facilities) and the 44 MW Jeffers Wind facility.

PUBLIC DOCUMENT
NOT-PUBLIC OR PROTECTED DATA EXCISED

Northern States Power Company

Docket Nos. E002/M-10-734, E002/M-06-1234
Petition - Acquisition of CWN and Jeffers Wind Facilities
December 21, 2018
Attachment A – 28 Pages Total

Attachment A is marked as "NOT-PUBLIC" as it contains information the Company considers to be trade secret data as defined by Minn. Stat. §13.37(1)(b). This data includes confidential pricing and other contract terms. The information has independent economic value from not being generally known to, and not being readily ascertainable by, other parties who could obtain economic value from its disclosure or use. We have marked additional information as "NOT PUBLIC" because the knowledge of such information in conjunction with public information in our Petition could also adversely impact future contract negotiations, potentially increasing costs for these services for our customers. Thus, the Company maintains this information as a trade secret.

Attachment A as provided with the Not-Public version of this filing is marked as "NOT-PUBLIC" in its entirety. Pursuant to Minn. R. 7829.0500, subp. 3, the Company provides the following description of the excised material:

1. **Nature of the Material:** PDF copy of Option Agreement made and entered into between Minnesota Wind Holdings, LLC and Northern States Power Company.
2. **Authors:** The Option Agreement was prepared by Company and Minnesota Wind Holdings LLC legal personnel.
3. **Importance:** The Option Agreement contains competitively sensitive pricing and other contract terms.
4. **Date the Information was Prepared**: The Option Agreement was prepared October 2018.

[Protected Data Begins

Protected Data Ends]

Xcel Energy®
RESPONSIBLE BY NATURE®

Xcel Energy
414 Nicollet Mall, 401-3
Minneapolis, MN 55401

October 15, 2018

Minnesota Wind Holdings, LLC
c/o Longroad Development Company, LLC
133 Federal Street, Suite 1202
Boston, MA 02110
Attention: Eric Barnhart

Minnesota Wind Holdings, LLC
c/o Longroad Development Company, LLC
133 Federal Street, Suite 1202
Boston, MA 02110
Attention: General Counsel

RE: Preliminary Option Exercise Notice

Dear Mr. Barnhart,

The purpose of this letter is to provide you with notice that Northern States Power Company is hereby delivering Preliminary Exercise Notice as that term is defined in the Option Agreement between Minnesota Wind Holdings, LLC and Northern States Power Company dated October 8, 2018.

Regards,

Brian Van Abel
Senior Vice President, Finance & Corporate Development

Cc: John Valerius

Xcel Energy
414 Nicollet Mall, 401-3
Minneapolis, MN 55401

November 14, 2018

Minnesota Wind Holdings, LLC
c/o Longroad Development Company, LLC
133 Federal Street, Suite 1202
Boston, MA 02110
Attention: Eric Barnhart

Minnesota Wind Holdings, LLC
c/o Longroad Development Company, LLC
133 Federal Street, Suite 1202
Boston, MA 02110
Attention: General Counsel

RE: Option Confirmation Notice

Dear Mr. Barnhart,

The purpose of this letter is to provide you with notice that Northern States Power Company is hereby delivering Option Confirmation Notice as that term is defined in the Option Agreement between Minnesota Wind Holdings, LLC and Northern States Power Company dated October 8, 2018.

Regards,

Brian Van Abel
Senior Vice President, Finance & Corporate Development

Cc: John Valerius

FIRST AMENDMENT TO
C-BED WIND GENERATION PURCHASE AGREEMENT
BETWEEN NORTHERN STATES POWER COMPANY AND
NORTH COMMUNITY TURBINES LLC

This First Amendment to C-BED Wind Generation Purchase Agreement (this "Amendment") is entered into as of this 26th day of October, 2018 ("Effective Date"), by and between Northern States Power Company, a Minnesota corporation, ("NSP" or "Company") with a principal place of business at 401 Nicollet Mall, Minneapolis, Minnesota 55401 and North Community Turbines, a Minnesota limited liability company ("NCT") acting on its own behalf and as sole member and agent on behalf of Community Wind North 1 LLC, Community Wind North 2 LLC, Community Wind North 5 LLC, Community Wind North 6 LLC, Community Wind North 8 LLC, and Community Wind North 15 LLC (collectively the "Turbine Companies") with a principal place of business at 133 Federal Street, Suite 1202, Boston, MA 02110. NCT and the Turbine Companies shall be referred to together as "Seller" in this Amendment. NCT/Seller and NSP are hereinafter referred to individually as a "Party" and collectively as the "Parties."

WITNESSETH:

WHEREAS, Seller and NSP are Parties to that certain C-BED Wind Generation Purchase Agreement dated as of May 28, 2010, for the purchase and sale of 16 MW of installed wind capacity and associated energy (as amended, the "NCT REPA");

WHEREAS, Seller has informed NSP that it intends to perform major maintenance on and partial refurbishment of the Facility that includes the installation of new turbines and related equipment in order to improve and increase the output of electricity generated at the Facility;

WHEREAS, in connection with such refurbishment, the Parties desire to amend the NCT REPA as set forth herein to address the pricing of additional Renewable Energy enabled by the refurbishment project and other matters as set forth herein, by executing and delivering this Amendment.

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the sufficiency and adequacy of which are hereby acknowledged, the Parties hereby agree as follows:

1. **Defined Terms and Phrases**. The capitalized terms and phrases used in this Amendment shall have the meaning stated in the NCT REPA. Other terms and phrases used in this Amendment but not defined in the NCT REPA shall have the meanings set forth herein, or as commonly used in the English language and, where applicable, Prudent Electric Industry Practice.

2. **Recitals**. The "Whereas" clauses recited above contain material terms of this Amendment and are incorporated herein by reference as if they are set forth herein.

3. **Amendments to NCT REPA**. Commencing on the Effective Date of this Amendment the NCT REPA shall be amended as follows:

a. **Section 1.5**. The following definitions shall be added to Article I in the appropriate alphabetical position:

1.8(a) "AGC" or "Automatic Generation Control" means the equipment and capability of an electric generation facility automatically to adjust the generation quantity within the

applicable Balancing Authority with the purpose of interchange balancing and specifically, the Facility's capability of accepting an AGC Set-Point electronically, and the automatic adjustment and regulation of the Facility's energy production via the SCADA System.

1.8(b) "AGC Protocols" means the protocols for AGC included in Appendix K - AGC Protocols; Data Collection; Technical Specifications, as such protocols may be modified from time to time in accordance with Section 10.7.

1.8(c) "AGC Remote/Local" means a handshake electronic signal sent from the Facility to the EMCC AGC system, and from the EMCC AGC system to the Facility, indicating the Facility is receiving AGC Set-Point locally (from the Facility) or remotely (EMCC AGC system) and is following that AGC Set-Point.

1.8(d) "AGC Set-Point" means the Company-generated analog or digital signal sent by the SCADA System to the Facility, representing the quantity of Renewable Energy to be generated by the Facility. The AGC Set-Point is calculated by the EMCC AGC system and communicated electronically to the Facility via the SCADA System.

1.27(a) "Committed Renewable Energy" has the meaning set forth in Section 2.5.

1.38(a) "Energy Markets Control Center" or "EMCC" means Company's merchant representatives responsible for dispatch of generating units, including the Facility.

1.38(b) "ERO" means the Electric Reliability Organization certified by FERC pursuant to Section 215 of the Federal Power Act or any successor organization. The certified ERO as of the date of this PPA is Midcontinent Independent System Operator, Inc. (MISO).

1.74(a) "ND PSC" means the North Dakota Public Service Commission.

1.78(a) "Park Potential" means the number of MW that depicts Seller's real time calculation of the Potential Energy capable of being provided by the Facility to Company at the Point of Delivery. Park Potential shall be calculated using the best-available data obtained through Commercially Reasonable methods; and shall be dependent upon measured wind speeds, power curves, Wind Turbine availability, and derate(s) and transmission line losses, and any other adjustment necessary to accurately reflect the Potential Energy at the Point of Delivery. Park Potential should be provided to the Company in real time through the Company's SCADA System in accordance with the AGC Protocols.

1.87(a) "PI System" means the "plant information" system for the Facility, as described and implemented in Appendix K - AGC Protocols; Data Collection; Technical Specifications.

1.89(a) "Potential Energy" for any period of time means the MWh of energy that the Facility is actually capable of delivering to the Point of Delivery by virtue of the Park Potential during such period.

1.92(a) "PUC Approval" has the meaning set forth in Section 5.3.

1.95(a) "Refurbishing Commercial Operation Date" means the date that the Refurbished Facility achieves Commercial Operation.

1.95(b) "Refurbishing Commercial Operation Milestone" means the Construction Milestone for the Refurbishing Commercial Operation Date as specified in Section 4.7.

1.95(c) "Refurbishing Construction Milestones" means the milestones set forth in Section 4.79.

1.95(d) "Refurbished Facility" means the Facility as it may be reconstructed and reconfigured as a result of Seller's refurbishment activities.

b. **Section 2.3(a)**. As of the Refurbishing Commercial Operation Date, Section 2.3 of the NCT REPA is deleted in its entirety and replaced as set forth below. For the avoidance of doubt, the terms of Section 2.3(a) shall not be modified by this Amendment prior to the Refurbishing Commercial Operation date.

(a) Guaranteed Price.

(i) Commencing on the Refurbishing Commercial Operation Date, NSP shall pay Seller for Net Energy and Capacity delivered to NSP by Seller at the Point of Delivery at a Guaranteed Price equal to [redacted] for up to the Committed Renewable Energy amount, without escalation for the remainder of the Term. NSP and Seller agree that the applicable Guaranteed Price is intended to compensate Seller for the Net Energy and Capacity delivered to NSP and that Seller is not entitled to a separate price or payment for the Capacity of the Facility to which NSP is entitled. The Parties further agree that the Guaranteed Price payment rate includes compensation for the Environmental and Renewable Energy Credits associated with the Net Energy and that NSP is entitled to obtain and utilize any and all such Environmental and Renewable Energy Credits at no additional cost under this REPA. As of the Refurbishing Commercial Operation Date, Appendix A-1 of the NCT REPA is deleted and of no further force and effect.

(ii) Commencing on the Refurbishing Commercial Operation Date, Seller shall have no obligation to sell and NSP shall have no obligation to buy Net Energy generated by the Refurbished Facility that is in excess of the Committed Renewable Energy ("Excess Energy") in any Commercial Operation Year, other than as follows:

A. Seller may elect upon written notice to sell and deliver and NSP shall purchase and accept Excess Energy from the Refurbished Facility.

B. For any Excess Energy delivered by Seller to NSP at the Point of Delivery in a Commercial Operation Year, NSP shall pay Seller at an Excess Energy payment rate equal to the MISO Day-Ahead Energy Market clearing price at the commercial node designated as NSP.CWN1. The Parties agree that the Excess Energy payment rate excludes compensation for Environmental and Renewable Energy Credits associated with the Excess Energy and that Seller is entitled to retain and utilize any and all such Environmental and Renewable Energy Credits. Seller shall reimburse NSP to the full extent

NSP incurs any cost relating to any Environmental and Renewable Energy Credits associated with Excess Energy now or in the future, including any cost associated with creation or transfer of such Environmental and Renewable Energy Credits or any cost assessed on NSP by any third party for purpose of tracking or reporting on the same.

c. **Section 2.5** of the NCT REPA is deleted in its entirety and replaced with the following:

2.5 Committed Nameplate Capacity and Committed Renewable Energy.

(a) From and after the Refurbishing Commercial Operation Date, Seller agrees that the Committed Nameplate Capacity of the NCT REPA shall be approximately 13.2 MW, and that the Committed Nameplate Capacity shall include only Capacity from the Facility.

(b) From and after the Refurbishing Commercial Operation Date, the Committed Renewable Energy is fifty thousand (50,000)MWh of Net Energy delivered to NSP in any Commercial Operation Year.

d. Section 4.1. Section 4.1 shall be amended by adding new subsection (g) as follows:

"(g) Seller shall construct the Refurbished Facility in accordance with Prudent Electric Industry Practice(s) and the Interconnection Agreement. During Commercial Operation of the Refurbished Facility, Seller shall maintain the Refurbished Facility according to Prudent Electric Industry Practice(s), the Interconnection Agreement, and this Agreement as amended."

e. Section 4.2. Section 4.2 shall be amended to add new subsection (j) which states:

"(j) NSP and Seller acknowledge and agree that the amendments agreed to in this Amendment are consistent with Seller's obligations to qualify as a C-BED project under that statute, as it existed at the time the NCT REPA was entered into. These amendments, including the downward adjustment to the price and the downward adjustment to the amount of Net Energy committed to NSP are consistent with the commitments of the NCT REPA. Such new pricing and production commitments shall be deemed to be reasonable under the circumstances and in compliance with the obligations of Sections 2.3(d), 4.2(g), 4.2(h) and 4.2(i) of the NCT REPA.

f. Article 4. Article 4 shall be amended by adding a new Section 4.7 as follows:

4.7 Refurbished Facility.

(a) Applicability of Article 4 to the Refurbished Facility. The terms of Section 4.1 of the NCT REPA shall apply to the Refurbished Facility to the extent necessary for NSP reasonably to confirm that the Refurbished Facility can be and is constructed in a manner consistent with the obligations imposed on the Facility under the NCT REPA and it can and does operate in a manner consistent with achieving Commercial Operation as required in such sections. To the extent that the terms of Section 4.1 of the NCT REPA conflict with this Amendment, the terms of this Amendment will control.

(b) Refurbishing Construction Milestones. In order to achieve the Refurbishing

Commercial Operation Date by the Refurbishing Commercial Operation Milestone, the Parties agree to meet the following Refurbishing Construction Milestones:

Refurbishing Construction Milestone	**Date**
PUC Approval	No later than March 31, 2019
Receipt of all Permits and other authorizations to commence construction and commencement of construction of the Refurbished Facility	No later than June 30, 2020
Refurbishing Commercial Operation Milestone	No later than December 31, 2020

(c) Refurbishing Commercial Operation Date. Unless otherwise agreed by the Parties, the Facility shall achieve the Refurbishing Commercial Operation Date and shall be fully capable of reliably producing Renewable Energy as contemplated by this Amendment and delivery such Renewable Energy to NSP at the Point of Delivery, no later than the Refurbishing Commercial Operation Milestone. Seller shall comply with the obligations set forth in Section 4.2(a)-(f) of the NCT REPA to the full extent feasible for the Refurbished Facility. All references in such section shall be deemed to be applicable to the Refurbished Facility as if such term had been used in that section.

(d) Facility Contracts. Upon reasonable request by NSP, Seller shall provide NSP with reasonable evidence that it has the capability to finance construction of the Refurbished Facility. Information that is commercially sensitive, confidential or proprietary may be redacted from documents provided to NSP pursuant to this paragraph. Further, upon reasonable request by NSP, Seller shall provide sufficient information for NSP to be reasonably assured that Seller has contracted with financially responsible vendors as part of the Refurbished Facility construction process.

(e) Renewable Energy During Construction of Refurbished Facility.

(i) During the period of active construction of the Refurbished Facility, estimated to be approximately 6 months prior to the Refurbishing Commercial Operation Date, the Seller's obligation to supply Renewable Energy, Capacity and related obligations shall be suspended and of no effect and the actual production during such months shall not be used for any purpose in calculating production or Seller's obligations for any purposes. Seller shall provide NSP with written notice at least ten (10) days prior to starting construction on the Refurbished Facility ("Construction Notice").

(ii) From and after the Refurbished Commercial Operation Date, the Committed Renewable Energy amount shall be as set forth in Section 2.5 of this Amendment and shall apply to Seller's commitments under the NCT REPA on a going-forward basis. For purposes of calculating Seller's historical production to supply the Committed Renewable Energy the following shall apply:

(A) For the period prior to the Refurbishing Commercial Operation date, the terms of the NCT REPA shall apply unchanged.

(B) From and after the Refurbishing Commercial Operation Date), the Committed Renewable Energy shall be calculated in amounts set forth in this Amendment.

g. **Section 4.2(d)**. Section 4.2(d) of the NCT REPA is hereby be deleted in its entirety and replaced with the following:

4.2(d). Facility Operation and Administration.

(i) Seller shall staff, control, and operate the Facility consistent with Prudent Electric Industry Practice, Appendix K – AGC Protocols; Data Collection; Technical Specifications; and this NCT REPA. Personnel of Seller shall be continuously available via telephone or other electronic means with (i) the capability of remotely starting, operating, and stopping the Facility within 10 minutes, and (ii) the ability to be present at the Site within 30 minutes.

(ii) Seller shall comply with Prudent Electric Industry Practice, the requirements of all Governmental Authorities and all reasonable requirements of NSP in the operation of the Facility. By way of example only, Seller shall perform all capacity testing of the Facility and related reporting, as and when required by Governmental Authorities.

(iii) Seller shall provide to NSP a day-ahead availability forecast in accordance with Appendix K – AGC Protocols; Data Collection; Technical Specifications, and any other reporting requirements required for compliance with NERC reliability standards. NSP shall forward Seller's forecast to the applicable local reliability coordinator on Seller's behalf, *provided, however,* that Seller shall remain responsible to ensure the timeliness and accuracy of forecasts and any changes to the real-time or forecast availability of the Facility. If, and to the extent that, the ERO modifies the forecasting or other reporting requirements imposed on NSP or the Facility, Seller shall timely provide required data to NSP or the ERO, as applicable.

(iv) Seller shall communicate all data necessary for NSP to integrate the Facility into NSP's EMCC in real time through the Facility's SCADA System in accordance with Appendix K – AGC Protocols; Data Collection; Technical Specifications. Seller shall maintain the Facility's SCADA System so that it is capable of interfacing with and reacting to NSP's AGC Set-Point and responding to signals from NSP's EMCC in accordance with the AGC Protocols.

(v) Seller shall use commercially reasonable efforts to adjust the real time Park Potential of the Facility when NSP communicates to Seller a measured difference of plus or minus two percent between the metered Renewable Energy and Park Potential, during periods when generation is not curtailed. In the event that Park Potential is not a reliable proxy for Potential Energy, Potential Energy shall be calculated as the aggregate energy available for delivery at the Point of Delivery using the best available data obtained through commercially reasonable methods; and shall be dependent upon measured wind speeds, power curves, Wind Turbine availability, and derate(s) and transmission line losses, and any other adjustment necessary to accurately reflect the Facility's capability to produce and deliver energy to the Interconnection Point.

(vi) From and after the Effective Date of this Amendment, Seller shall provide NSP, at Seller's expense, real time performance and meteorological data for all Wind Turbines and meteorological towers at the Facility in accordance with Appendix K – AGC Protocols; Data Collection;

Technical Specifications for the Term of this NCT REPA. Seller shall maintain Seller-owned data collection systems that are compatible with NSP's PI System. Seller shall ensure that real time communications capabilities are available and maintained for transmission to NSP's PI System. Seller shall ensure that all meteorological equipment at a minimum meets the specifications set forth in Appendix K – AGC Protocols; Data Collection; Technical Specifications. NSP shall have the right to disclose data gathered through NSP's PI System publicly; provided, however, that such data is (i) masked to obscure the origin of the data and (ii) aggregated so that the data cannot be correlated and used by competitors of Seller and/or the supplier of the Wind Turbines.

(vii) Accreditation. NSP has certain planning, operating, and reporting requirements. Seller shall complete at its own expense all applicable testing and reporting requirements for the Facility, including any required capacity testing.

h. **Section 5.3**. Section 5.3 of the NCT REPA shall be deleted in its entirety and replaced as follows:

5.3 Regulatory Approval of This Amendment. NSP shall have the right to seek PUC Approval of this Amendment as set forth in this Section 5.3.

(A) No later than 75 calendar days after the Effective Date, NSP may apply to the MPUC and/or the ND PSC for PUC Approval. If NSP fails to apply for PUC Approval within 60 calendar days following the date of this Amendment, NSP shall be deemed to have waived its right to obtain PUC Approval from that jurisdiction. If NSP fails to apply for PUC Approval from either applicable jurisdiction, this Amendment shall remain in full force and effect thereafter.

(B) If NSP applies for PUC Approval, NSP shall use commercially reasonable efforts to obtain PUC Approval as soon as reasonably practicable. Seller shall reasonably cooperate with NSP's efforts to obtain PUC Approval.

(1) Seller shall make commercially reasonable effort to make available, upon NSP's reasonable request, access to any personnel of Seller and any records relating to the Facility to the extent not protected by confidentiality or non-disclosure agreements, statutes, or regulations and to the extent that NSP requires the same for such PUC Approval, to the extent such approval may be required. NSP shall not reimburse Seller for any expenses with respect thereto incurred by Seller.

(2) If NSP applies for PUC Approval, NSP shall reasonably seek to obtain PUC Approval as soon as practicable and in any event not later than March 31, 2019. Each Party shall each have the right to terminate this Amendment, without any further financial or other obligation to the other Party as a result of such termination, by notice to the other Party at any time: (i) within 30 Days following issuance of a written order by the MPUC rejecting PUC Approval, or granting PUC Approval with conditions that are unacceptable to the terminating Party in its sole discretion; (ii) if the MPUC has not issued a written order granting or rejecting PUC Approval within 180 Days following NSP's application(s) for PUC Approval; (iii) at any time within 30 Days following timely appeal by any party with standing, of a written order granting PUC Approval; or (iv) by March 31, 2019.

(3) For purposes of the NCT REPA, "PUC Approval" means, as applicable a written order of (i) the MPUC, which makes an affirmative determination that this Amendment is reasonable and prudent and/or (ii) the ND PSC, which makes an

affirmative advance determination of prudence of NSP's acquisition of the resource, and in either case that all costs incurred under this Amendment are recoverable from NSP's retail customers pursuant to applicable law, subject only to the requirement that the MPUC retain ongoing prudency review of NSP's performance and administration of the NCT REPA.

4. **Costs and Expenses**.

a. Seller hereby agrees to reimburse NSP for its direct, documented expenses incurred in connection with the execution of this Amendment, including regulatory and legal expenses associated with negotiating and finalizing this Amendment. Such reimbursement shall be limited to a maximum amount of Sixty Five Thousand Dollars ($65,000) and shall be a one-time payment made to NSP upon submission to Seller of documentation of such expenses.

b. Beginning with the end of the first Contract Year that follows the first Refurbishing Commercial Operation Date, Seller hereby agrees to reimburse NSP on an annual basis for its direct, documented additional expenses incurred in connection with the administration of the NCT REPA as a result of this Amendment. Such annual reimbursement shall be limited to a maximum of Five Thousand Dollars ($5,000) per year and shall be paid to NSP upon submission to Seller of documentation of such additional expenses.

5. **Exhibit Index.** As of the Effective Date, the following Appendix is added to the list of Appendices and Exhibits following the Table of Contents of the NCT REPA:

Appendix K – AGC Protocols; Data Collection; Technical Specifications

6. **Appendix B-1**. As of the Refurbishing Commercial Operation Date, Appendix B of the NCT REPA shall be modified and amended to include the technical specifications to be provided by Seller with delivery of the Construction Notice.

7. **Appendix K – AGC Protocols; Data Collection; Technical Specifications**. As of the Effective Date, Appendix K attached hereto is added as "Appendix K – AGC Protocols; Data Collection; Technical Specifications" as an exhibit to the NCT REPA.

8. **Option for NSP to Purchase Refurbished Facility**. The Parties acknowledge that they have entered into an option agreement as of the Effective Date for NSP to purchase the Refurbished Facility as of the Refurbishing Commercial Operation Date ("Purchase Option Agreement"). This Amendment is independent of the Purchase Option Agreement and, as a separate agreement, shall survive the modification or termination of the Purchase Option Agreement. In the event of any conflict between this Amendment and the Purchase Option Agreement, this Amendment shall control with respect to all matters relating to the NCT REPA.

9. **General**.

a. **Representations Regarding this Amendment**. By its execution hereof, each Party represents and warrants that it is authorized to enter into this Amendment, that this Amendment does not conflict with any contract, lease, instrument, or other obligation to which it is a party or by which it is bound, which conflict could reasonably be expected to have a material adverse effect on the ability of such Party to perform its obligations hereunder, and that this Amendment represents its valid and binding obligation, enforceable against it in accordance with its terms.

b. **No Other Amendments**. Except as specifically provided in this Amendment, no other amendments, revisions, or changes are made or have been made to the NCT REPA. All other terms and conditions of the NCT REPA remain in full force and effect and the Parties hereby ratify and confirm their rights, obligations, and representations under the NCT REPA, as amended hereby.

c. **Conforming References**. Upon the effectiveness of this Amendment, each reference in the NCT REPA to "this Agreement, "there under", "hereto", "herein", or words of like import, shall mean and be a reference to the NCT REPA as amended hereby.

d. **Counterparts**. This Amendment may be executed in one or more counterparts, each of which shall be considered an original instrument, but all of which shall be considered one and the same agreement, and shall become binding when one or more counterparts have been signed by each of the Parties and delivered to each of them.

e. **Applicable Law**. This Amendment shall be governed by the laws of the State of Minnesota (without reference to choice of law doctrine), except to the extent the Parties' rights and obligations are required to be governed by United States Federal law, then such rights and obligations by United States Federal law. The Parties hereby submit to the jurisdiction of the courts of the State of Minnesota, and venue is hereby stipulated as Minneapolis, Minnesota.

f. **Effectiveness of This Amendment**. The amendments to the NCT REPA contemplated by this Amendment shall become effective as of the receipt or waiver of PUC Approval as set forth in this Amendment.

[Signatures Follow]

SELLER

North Community Turbines LLC on behalf of itself and the Turbine Companies

By: _____
Name: Paul Gruner
Title: CEO

NSP

Northern States Power Company,
a Minnesota corporation

By: _____
Name:
Title:

Tim Kawakami
Director, Purchased Power
Xcel Energy Services Inc.
Authorized signatory for Northern States Power Company,
A Minnesota corporation

Appendix K

AGC Protocols; Data Collection; Technical Specifications

AGC

1. AGC Communications between NSP and Seller

NSP will receive and send AGC Set-Point and related data over an analog or digital line. The data points covered under the NCT REPA, as described below, may overlap data requirements for MISO or NSP's applicable forecasting group.

2. AGC Data Points to be sent from Seller to NSP via SCADA

The following data points shall be transmitted via SCADA from Seller to NSP and represent Facility level data:

Description	Units
AGC Set-Point (echo)	MW
Power demand	MW
Actual power	MW
Park Potential	MW
Actual reactive power	Mvars
Average Voltage	kV
Number of turbines online and running	Integer
AGC Status	Remote/Local

3. Response times and limitations of Facility in regards to AGC

The following protocols outline the expectations for responding to the AGC Set-Point. Except in the case of the Frequency of Changes, these protocols will be generally bound by the manufacturers' specifications for the equipment that Seller has chosen for the Facility.

a. Allowable Variances in Excess of AGC Set-Point. Once the Facility has reached the AGC Set-Point, there may be variances in excess of such set-point up to two percent (2%) on average as measured during a 10-minute period. These variances are due to changing wind conditions versus the manufacturer's specifications for responding to those new conditions.

b. Frequency of Changes. NSP may send a new AGC Set-Point to the Facility as frequently as the Wind Turbine manufacturer specifications allow.

c. Range of AGC Set-Point. The range of set point values can be between zero percent (0%) and one-hundred percent (100%) of Park Potential.

4. Backup Communications

In the event of an AGC failure, NSP and Seller shall communicate via telephone in order to correct the failure.

DATA COLLECTION

1. Data

At least two months prior to the Refurbishing Commercial Operation Date, Seller will deliver to NSP a report showing (i) manufacturer, model, and year of all Wind Turbines and meteorological instrumentation and (ii) the latitude, longitude and hub height at every Wind Turbine and meteorological tower.

Beginning upon the Refurbishing Commercial Operation Date, Seller shall transmit and provide to NSP the real-time data set forth below, refreshed in approximately four-ten (4-10) second intervals with regard to its generation of Renewable Energy at the Facility:

a. Five data points from each Wind Turbine:

1. Turbine generation (kW)
2. Wind Speed (meters per second – mps)
3. Turbine Availability
4. Wind Direction (in degrees relative to true north)
5. Temperature (Celsius)

b. Five data points from each Meteorological Tower:

1.	Wind Speed**	(mps)
2.	Wind Direction**	(degrees relative to true north)
3.	Temperature	(Celsius)
4.	Pressure	(mb)
5.	Air Density	(kg/m^3)

** = at all metered heights.

c. In addition to the other requirements for data collection, Seller shall install, maintain, and operate at least one meteorological tower that is installed at hub height and is placed upstream of the prevailing wind path. The data stream from this meteorological tower to NSP's PI System must be reliable during periods of transmission-related curtailments and must include battery back-up at the meteorological tower and a local source of electricity to power the PI System and interconnectivity between the Facility and NSP during transmission outages.

d. Seller shall provide a map and key for each Wind Turbine sufficient to allow NSP to correlate the data received through the PI System to each individual Wind Turbine.

2. Forecasting Requirements

a. Not later than 5:00 a.m. Central Prevailing Time (C.P.T.) on each Day, Seller shall post an availability and production forecast for the Facility through 11:00 p.m. on the following Day. The forecast shall be submitted through an availability forecast system specified by NSP to Seller. Prior to the

Refurbishing Commercial Operation Date, NSP shall provide Seller with information necessary for Seller to access the chosen availability forecast system.

b. If any events or circumstances reduce the forecasted availability of the Facility by 5 MW or more, such reduction shall be (1) communicated to the real-time operator via telephone with (2) immediate update to the availability forecast in the availability forecast system. For example:

i. A disturbance at a 100.5 MW (67 x 1.5 MW wind turbines) wind plant causes 26 wind turbines (39 MW) to become unavailable. Only two turbines were planned to be down for maintenance (3 MW). The expected reduction in the available capacity is 39 MW; exceeding the 5-MW requirement. A phone call to real-time operations with immediate update of the availability forecast is required. At the time of the outage, the estimated expected duration was thought to be six hours. Three hours into the outage, it became known that the 26 turbines would be available in an hour. A phone call notifying real-time of the change in availability is required with a coincident update in the availability forecast system.

ii. A disturbance at a 10 MW (8 x 1.25 MW turbines) wind plant forces four turbines (5 MW) off-line. Because the disturbance equals 5 MW, a phone call to real-time operations with immediate update of the availability forecast is required. If the disturbance had only affected three turbines (3.75MW), then no immediate action would be necessary.

iii. A 20 MW (20 x 1 MW turbines) wind plant is off-line for transmission maintenance. The maintenance work is completed two hours ahead of the projected completion. Because the change is greater than 10 MW, prior to coming on-line, a phone call is required coincident with an update to the availability forecast system to indicate the new availability.

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FIRST AMENDMENT TO
C-BED WIND GENERATION PURCHASE AGREEMENT
BETWEEN NORTHERN STATES POWER COMPANY AND NORTH WIND TURBINES LLC

This First Amendment to C-BED Wind Generation Purchase Agreement (this "Amendment") is entered into as of this 26th day of October, 2018 ("Effective Date"), by and between Northern States Power Company, a Minnesota corporation, ("NSP" or "Company") with a principal place of business at 401 Nicollet Mall, Minneapolis, Minnesota 55401 and North Wind Turbines LLC a Minnesota limited liability company ("NWT") acting on its own behalf and as sole member and agent on behalf of Community Wind North 3 LLC, Community Wind North 7 LLC, Community Wind North 9 LLC, Community Wind North 10 LLC, Community Wind North 11 LLC and Community Wind North 13 LLC (collectively, the "Turbine Companies") , with a principal place of business at 133 Federal Street, Suite 1202, Boston, MA 02110. NWT and the Turbine Companies shall be referred to together as "Seller" in this Amendment. Seller and NSP are hereinafter referred to individually as a "Party" and collectively as the "Parties."

WITNESSETH:

WHEREAS, Seller and NSP are Parties to that certain C-BED Wind Generation Purchase Agreement dated as of May 28, 2010, for the purchase and sale of 14 MW of installed wind capacity and associated energy (as amended, the "NWT REPA");

WHEREAS, Seller has informed NSP that it intends to perform major maintenance on and partial refurbishment of the Facility that includes the installation of new turbines and related equipment in order to improve and increase the output of electricity generated at the Facility;

WHEREAS, in connection with such refurbishment, the Parties desire to amend the NWT REPA as set forth herein to address the pricing of additional Renewable Energy enabled by the refurbishment project and other matters as set forth herein, by executing and delivering this Amendment.

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the sufficiency and adequacy of which are hereby acknowledged, the Parties hereby agree as follows:

1. **Defined Terms and Phrases**. The capitalized terms and phrases used in this Amendment shall have the meaning stated in the NWT REPA. Other terms and phrases used in this Amendment but not defined in the NWT REPA shall have the meanings set forth herein, or as commonly used in the English language and, where applicable, Prudent Electric Industry Practice.

2. **Recitals**. The "Whereas" clauses recited above contain material terms of this Amendment and are incorporated herein by reference as if they are set forth herein.

3. **Amendments to NWT REPA**. Commencing on the Effective Date of this Amendment the NWT REPA shall be amended as follows:

a. **Section 1.5**. The following definitions shall be added to Article I in the appropriate alphabetical position:

1.8(a) "AGC" or "Automatic Generation Control" means the equipment and capability of an electric generation facility automatically to adjust the generation quantity within the

applicable Balancing Authority with the purpose of interchange balancing and specifically, the Facility's capability of accepting an AGC Set-Point electronically, and the automatic adjustment and regulation of the Facility's energy production via the SCADA System.

1.8(b) "AGC Protocols" means the protocols for AGC included in Appendix K - AGC Protocols; Data Collection; Technical Specifications, as such protocols may be modified from time to time in accordance with Section 10.7.

1.8(c) "AGC Remote/Local" means a handshake electronic signal sent from the Facility to the EMCC AGC system, and from the EMCC AGC system to the Facility, indicating the Facility is receiving AGC Set-Point locally (from the Facility) or remotely (EMCC AGC system) and is following that AGC Set-Point.

1.8(d) "AGC Set-Point" means the Company-generated analog or digital signal sent by the SCADA System to the Facility, representing the quantity of Renewable Energy to be generated by the Facility. The AGC Set-Point is calculated by the EMCC AGC system and communicated electronically to the Facility via the SCADA System.

1.27(a) "Committed Renewable Energy" has the meaning set forth in Section 2.5.

1.38(a) "Energy Markets Control Center" or "EMCC" means Company's merchant representatives responsible for dispatch of generating units, including the Facility.

1.38(b) "ERO" means the Electric Reliability Organization certified by FERC pursuant to Section 215 of the Federal Power Act or any successor organization. The certified ERO as of the date of this PPA is Midcontinent Independent System Operator, Inc. (MISO).

1.74(a) "ND PSC" means the North Dakota Public Service Commission.

1.78(a) "Park Potential" means the number of MW that depicts Seller's real time calculation of the Potential Energy capable of being provided by the Facility to Company at the Point of Delivery. Park Potential shall be calculated using the best-available data obtained through Commercially Reasonable methods; and shall be dependent upon measured wind speeds, power curves, Wind Turbine availability, and derate(s) and transmission line losses, and any other adjustment necessary to accurately reflect the Potential Energy at the Point of Delivery. Park Potential should be provided to the Company in real time through the Company's SCADA System in accordance with the AGC Protocols.

1.87(a) "PI System" means the "plant information" system for the Facility, as described and implemented in Appendix K - AGC Protocols; Data Collection; Technical Specifications.

1.89(a) "Potential Energy" for any period of time means the MWh of energy that the Facility is actually capable of delivering to the Point of Delivery by virtue of the Park Potential during such period.

1.92(a) "PUC Approval" has the meaning set forth in Section 5.3.

195(a) "Refurbishing Commercial Operation Date" means the date that the Refurbished Facility achieves Commercial Operation.

1.95(b) "Refurbishing Commercial Operation Milestone" means the Construction Milestone for the Refurbishing Commercial Operation Date as specified in Section 4.7.

1.95(c) "Refurbishing Construction Milestones" means the milestones set forth in Section 4.7.

1.95(d) "Refurbished Facility" means the Facility as it may be reconstructed and reconfigured as a result of Seller's refurbishment activities.

b. **Section 2.3(a)**. As of the Refurbishing Commercial Operation Date, Section 2.3 of the NWT REPA is deleted in its entirety and replaced as set forth below. For the avoidance of doubt, the terms of Section 2.3(a) shall not be modified by this Amendment prior to the Refurbishing Commercial Operation date.

(a) Guaranteed Price.

(i) Commencing on the Refurbishing Commercial Operation Date, NSP shall pay Seller for Net Energy and Capacity delivered to NSP by Seller at the Point of Delivery at a Guaranteed Price equal to [redacted] for up to the Committed Renewable Energy amount, without escalation for the remainder of the Term. NSP and Seller agree that the applicable Guaranteed Price is intended to compensate Seller for the Net Energy and Capacity delivered to NSP and that Seller is not entitled to a separate price or payment for the Capacity of the Facility to which NSP is entitled. The Parties further agree that the Guaranteed Price payment rate includes compensation for the Environmental and Renewable Energy Credits associated with the Net Energy and that NSP is entitled to obtain and utilize any and all such Environmental and Renewable Energy Credits at no additional cost under this REPA. As of the Refurbishing Commercial Operation Date, Appendix A-1 of the NWT REPA is deleted and of no further force and effect.

(ii) Commencing on the Refurbishing Commercial Operation Date, Seller shall have no obligation to sell and NSP shall have no obligation to buy Net Energy generated by the Refurbished Facility that is in excess of the Committed Renewable Energy ("Excess Energy") in any Commercial Operation Year, other than as follows:

A. Seller may elect upon written notice to sell and deliver and NSP shall purchase and accept Excess Energy from the Refurbished Facility.

B. For any Excess Energy delivered by Seller to NSP at the Point of Delivery in a Commercial Operation Year, NSP shall pay Seller at an Excess Energy payment rate equal to the MISO Day-Ahead Energy Market clearing price at the commercial node designated as NSP.CWN2. The Parties agree that the Excess Energy payment rate excludes compensation for Environmental and Renewable Energy Credits associated with the Excess Energy and that Seller is entitled to retain and utilize any and all such Environmental and

Renewable Energy Credits. Seller shall reimburse NSP to the full extent NSP incurs any cost relating to any Environmental and Renewable Energy Credits associated with Excess Energy now or in the future, including any cost associated with creation or transfer of such Environmental and Renewable Energy Credits or any cost assessed on NSP by any third party for purpose of tracking or reporting on the same.

c. **Section 2.5**. Section 2.5 of the NWT REPA is deleted in its entirety and replaced with the following:

2.5 Committed Nameplate Capacity and Committed Renewable Energy.

(a) From and after the Refurbishing Commercial Operation Date, Seller agrees that the Committed Nameplate Capacity of the NWT REPA shall be approximately 13.2 MW, and that the Committed Nameplate Capacity shall include only Capacity from the Facility.

(b) From and after the Refurbishing Commercial Operation Date, the Committed Renewable Energy is fifty thousand (50,000) MWh of Net Energy delivered to NSP in any Commercial Operation Year.

d. **Section 4.1**. Section 4.1 shall be amended by adding new subsection (g) as follows:

"(g) Seller shall construct the Refurbished Facility in accordance with Prudent Electric Industry Practice(s) and the Interconnection Agreement. During Commercial Operation of the Refurbished Facility, Seller shall maintain the Refurbished Facility according to Prudent Electric Industry Practice(s), the Interconnection Agreement, and this Agreement as amended."

e. **Section 4.2**. Section 4.2 shall be amended to add new subsection (j) which states:

"(j) NSP and Seller acknowledge and agree that the amendments agreed to in this Amendment are consistent with Seller's obligations to qualify as a C-BED project under that statute, as it existed at the time the NWT REPA was entered into. These amendments, including the downward adjustment to the price and the downward adjustment to the amount of Net Energy committed to NSP are consistent with the commitments of the NWT REPA. Such new pricing and production commitments shall be deemed to be reasonable under the circumstances and in compliance with the obligations of Sections 2.3(d), 4.2(g), 4.2(h) and 4.2(i) of the NWT REPA.

f. **Article 4**. Article 4 shall be amended by adding a new Section 4.7 as follows:

4.7 Refurbished Facility.

(a) Applicability of Article 4 to the Refurbished Facility. The terms of Section 4.1 of the NWT REPA shall apply to the Refurbished Facility to the extent necessary for NSP reasonably to confirm that the Refurbished Facility can be and is constructed in a manner consistent with the obligations imposed on the Facility under the NWT REPA and it can and does operate in a manner consistent with achieving Commercial Operation as required in such sections. To the extent that the terms of Section 4.1 of the NWT REPA conflict with this Amendment, the terms of this Amendment will control.

(b) Refurbishing Construction Milestones. In order to achieve the Refurbishing Commercial Operation Date by the Refurbishing Commercial Operation Milestone, the Parties agree to meet the following Refurbishing Construction Milestones:

Refurbishing Construction Milestone	**Date**
PUC Approval	No later than March 31, 2019
Receipt of all Permits and other authorizations to commence construction and commencement of construction of the Refurbished Facility	No later than June 30, 2020
Refurbishing Commercial Operation Milestone	No later than December 31, 2020

(c) Refurbishing Commercial Operation Date. Unless otherwise agreed by the Parties, the Facility shall achieve the Refurbishing Commercial Operation Date and shall be fully capable of reliably producing Renewable Energy as contemplated by this Amendment and delivery such Renewable Energy to NSP at the Point of Delivery, no later than the Refurbishing Commercial Operation Milestone. Seller shall comply with the obligations set forth in Section 4.2(a)-(f) of the NWT REPA to the full extent feasible for the Refurbished Facility. All references in such section shall be deemed to be applicable to the Refurbished Facility as if such term had been used in that section.

(d) Facility Contracts. Upon reasonable request by NSP, Seller shall provide NSP with reasonable evidence that it has the capability to finance construction of the Refurbished Facility. Information that is commercially sensitive, confidential or proprietary may be redacted from documents provided to NSP pursuant to this paragraph. Further, upon reasonable request by NSP, Seller shall provide sufficient information for NSP to be reasonably assured that Seller has contracted with financially responsible vendors as part of the Refurbished Facility construction process.

(e) Renewable Energy During Construction of Refurbished Facility.

(i) During the period of active construction of the Refurbished Facility, estimated to be approximately 6 months prior to the Refurbishing Commercial Operation Date, the Seller's obligation to supply Renewable Energy, Capacity and related obligations shall be suspended and of no effect and the actual production during such months shall not be used for any purpose in calculating production or Seller's obligations for any purposes. Seller shall provide NSP with written notice at least ten (10) days prior to starting construction on the Refurbished Facility ("Construction Notice").

(ii) From and after the Refurbished Commercial Operation Date, the Committed Renewable Energy amount shall be as set forth in Section 2.5 of this Amendment and shall apply to Seller's commitments under the NWT REPA on a going-forward basis. For purposes of calculating Seller's historical production to

supply the Committed Renewable Energy the following shall apply:

(A) For the period prior to the Refurbishing Commercial Operation date, the terms of the NWT REPA shall apply unchanged.

(B) From and after the Refurbishing Commercial Operation Date, the Committed Renewable Energy shall be calculated in amounts set forth in this Amendment.

g. **Section 4.2(d)**. Section 4.2(d) of the NWT REPA is hereby be deleted in its entirety and replaced with the following:

4.2(d). Facility Operation and Administration.

(1) Seller shall staff, control, and operate the Facility consistent with Prudent Electric Industry Practice, Appendix K – AGC Protocols; Data Collection; Technical Specifications; and this NWT REPA. Personnel of Seller shall be continuously available via telephone or other electronic means with (i) the capability of remotely starting, operating, and stopping the Facility within 10 minutes, and (ii) the ability to be present at the Site within 30 minutes.

(2) Seller shall comply with Prudent Electric Industry Practice, the requirements of all Governmental Authorities and all reasonable requirements of NSP in the operation of the Facility. By way of example only, Seller shall perform all capacity testing of the Facility and related reporting, as and when required by Governmental Authorities.

(3) Seller shall provide to NSP a day-ahead availability forecast in accordance with Appendix K – AGC Protocols; Data Collection; Technical Specifications, and any other reporting requirements required for compliance with NERC reliability standards. NSP shall forward Seller's forecast to the applicable local reliability coordinator on Seller's behalf, *provided, however,* that Seller shall remain responsible to ensure the timeliness and accuracy of forecasts and any changes to the real-time or forecast availability of the Facility. If, and to the extent that, the ERO modifies the forecasting or other reporting requirements imposed on NSP or the Facility, Seller shall timely provide required data to NSP or the ERO, as applicable.

(4) Seller shall communicate all data necessary for NSP to integrate the Facility into NSP's EMCC in real time through the Facility's SCADA System in accordance with Appendix K – AGC Protocols; Data Collection; Technical Specifications. Seller shall maintain the Facility's SCADA System so that it is capable of interfacing with and reacting to NSP's AGC Set-Point and responding to signals from NSP's EMCC in accordance with the AGC Protocols.

(5) Seller shall use commercially reasonable efforts to adjust the real time Park Potential of the Facility when NSP communicates to Seller a measured difference of plus or minus two percent between the metered Renewable Energy and Park Potential, during periods when generation is not curtailed. In the event that Park Potential is not a reliable proxy for Potential Energy, Potential Energy shall be calculated as the aggregate energy available for delivery at the Point of Delivery using the best available data obtained through commercially reasonable methods; and shall be dependent upon measured wind speeds, power curves, Wind Turbine availability, and derate(s) and transmission line losses, and any other adjustment necessary to accurately reflect the Facility's capability to produce and deliver energy to the Interconnection Point.

(6) From and after the Effective Date of this Amendment, Seller shall provide NSP, at Seller's expense, real time performance and meteorological data for all Wind Turbines and meteorological towers at the Facility in accordance with Appendix K – AGC Protocols; Data Collection; Technical Specifications for the Term of this NWT REPA. Seller shall maintain Seller-owned data collection systems that are compatible with NSP's PI System. Seller shall ensure that real time communications capabilities are available and maintained for transmission to NSP's PI System. Seller shall ensure that all meteorological equipment at a minimum meets the specifications set forth in Appendix K – AGC Protocols; Data Collection; Technical Specifications. NSP shall have the right to disclose data gathered through NSP's PI System publicly; provided, however, that such data is (i) masked to obscure the origin of the data and (ii) aggregated so that the data cannot be correlated and used by competitors of Seller and/or the supplier of the Wind Turbines.

(7) Accreditation. NSP has certain planning, operating, and reporting requirements. Seller shall complete at its own expense all applicable testing and reporting requirements for the Facility, including any required capacity testing.

h. **Section 5.3**. Section 5.3 of the NWT REPA shall be deleted in its entirety and replaced as follows:

5.3 Regulatory Approval of This Amendment. NSP shall have the right to seek PUC Approval of this Amendment as set forth in this Section 5.3.

(A) No later than 75 calendar days after the Effective Date, NSP may apply to the MPUC and/or the ND PSC for PUC Approval. If NSP fails to apply for PUC Approval within 60 calendar days following the date of this Amendment, NSP shall be deemed to have waived its right to obtain PUC Approval from that jurisdiction. If NSP fails to apply for PUC Approval from either applicable jurisdiction, this Amendment shall remain in full force and effect thereafter.

(B) If NSP applies for PUC Approval, NSP shall use commercially reasonable efforts to obtain PUC Approval as soon as reasonably practicable. Seller shall reasonably cooperate with NSP's efforts to obtain PUC Approval.

(1) Seller shall make commercially reasonable effort to make available, upon NSP's reasonable request, access to any personnel of Seller and any records relating to the Facility to the extent not protected by confidentiality or non-disclosure agreements, statutes, or regulations and to the extent that NSP requires the same for such PUC Approval, to the extent such approval may be required. NSP shall not reimburse Seller for any expenses with respect thereto incurred by Seller.

(2) If NSP applies for PUC Approval, NSP shall reasonably seek to obtain PUC Approval as soon as practicable and in any event not later than March 31, 2019. Each Party shall each have the right to terminate this Amendment, without any further financial or other obligation to the other Party as a result of such termination, by notice to the other Party at any time: (i) within 30 Days following issuance of a written order by the MPUC rejecting PUC Approval, or granting PUC Approval with conditions that are unacceptable to the terminating Party in its sole discretion; (ii) if the MPUC has not issued a written order granting or rejecting PUC Approval within 180 Days following NSP's application(s) for PUC Approval; (iii) at any time within 30 Days following timely appeal by any party with standing, of a written order granting PUC Approval; or (iv) by March 31, 2019.

(3) For purposes of the NWT REPA, "PUC Approval" means, as applicable a written order of (i) the MPUC, which makes an affirmative determination that this Amendment is reasonable and prudent and/or (ii) the ND PSC, which makes an affirmative advance determination of prudence of NSP's acquisition of the resource, and in either case that all costs incurred under this Amendment are recoverable from NSP's retail customers pursuant to applicable law, subject only to the requirement that the MPUC retain ongoing prudency review of NSP's performance and administration of the NWT REPA.

4. **Costs and Expenses**.

a. Seller hereby agrees to reimburse NSP for its direct, documented expenses incurred in connection with the execution of this Amendment, including regulatory and legal expenses associated with negotiating and finalizing this Amendment. Such reimbursement shall be limited to a maximum amount of Sixty Five Thousand Dollars ($65,000) and shall be a one-time payment made to NSP upon submission to Seller of documentation of such expenses.

b. Beginning with the end of the first Contract Year that follows the first Refurbishing Commercial Operation Date, Seller hereby agrees to reimburse NSP on an annual basis for its direct, documented additional expenses incurred in connection with the administration of the NWT REPA as a result of this Amendment. Such annual reimbursement shall be limited to a maximum of Five Thousand Dollars ($5,000) per year and shall be paid to NSP upon submission to Seller of documentation of such additional expenses.

5. **Exhibit Index.** As of the Effective Date, the following Appendix is added to the list of Appendices and Exhibits following the Table of Contents of the NWT REPA:

Appendix K – AGC Protocols; Data Collection; Technical Specifications

6. **Appendix B-1**. As of the Refurbishing Commercial Operation Date, Appendix B of the NWT REPA shall be modified and amended to include the technical specifications to be provided by Seller with delivery of the Construction Notice.

7. **Appendix K – AGC Protocols; Data Collection; Technical Specifications**. As of the Effective Date, Appendix K attached hereto is added as "Appendix K – AGC Protocols; Data Collection; Technical Specifications" as an exhibit to the NWT REPA.

8. **Option for NSP to Purchase Refurbished Facility**. The Parties acknowledge that they have entered into an option agreement as of the Effective Date for NSP to purchase the Refurbished Facility as of the Refurbishing Commercial Operation Date ("Purchase Option Agreement"). This Amendment is independent of the Purchase Option Agreement and, as a separate agreement, shall survive the modification or termination of the Purchase Option Agreement. In the event of any conflict between this Amendment and the Purchase Option Agreement, this Amendment shall control with respect to all matters relating to the NWT REPA.

9. **General**.

a. **Representations Regarding this Amendment**. By its execution hereof, each Party represents and warrants that it is authorized to enter into this Amendment, that this Amendment does not conflict with any contract, lease, instrument, or other obligation to which it is a party or by which it is bound, which conflict could reasonably be expected to have a material adverse effect on the ability of such Party to perform its obligations hereunder, and that this Amendment represents its valid and binding obligation, enforceable against it in accordance with its terms.

b. **No Other Amendments**. Except as specifically provided in this Amendment, no other amendments, revisions, or changes are made or have been made to the NWT REPA. All other terms and conditions of the NWT REPA remain in full force and effect and the Parties hereby ratify and confirm their rights, obligations, and representations under the NWT REPA, as amended hereby.

c. **Conforming References**. Upon the effectiveness of this Amendment, each reference in the NWT REPA to "this Agreement, "there under", "hereto", "herein", or words of like import, shall mean and be a reference to the NWT REPA as amended hereby.

d. **Counterparts**. This Amendment may be executed in one or more counterparts, each of which shall be considered an original instrument, but all of which shall be considered one and the same agreement, and shall become binding when one or more counterparts have been signed by each of the Parties and delivered to each of them.

e. **Applicable Law**. This Amendment shall be governed by the laws of the State of Minnesota (without reference to choice of law doctrine), except to the extent the Parties' rights and obligations are required to be governed by United States Federal law, then such rights and obligations by United States Federal law. The Parties hereby submit to the jurisdiction of the courts of the State of Minnesota, and venue is hereby stipulated as Minneapolis, Minnesota.

f. **Effectiveness of This Amendment**. The amendments to the NWT REPA contemplated by this Amendment shall become effective as of the receipt or waiver of PUC Approval as set forth in this Amendment.

[Signatures Follow]

SELLER

North Wind Turbines LLC on behalf of itself and the Turbine Companies

By: _____
Name:
Title:

NSP

Northern States Power Company,
a Minnesota corporation

By: _____
Name:
Title:

'n Kawakami
ector, Purchased Power
'l Energy Services Inc.
thorized signatory for Northern States Power Company,
'Minnesota corporation

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AGC Protocols; Data Collection; Technical Specifications

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NSP will receive and send AGC Set-Point and related data over an analog or digital line. The data points covered under the NWT REPA, as described below, may overlap data requirements for MISO or NSP's applicable forecasting group.

2. AGC Data Points to be sent from Seller to NSP via SCADA

The following data points shall be transmitted via SCADA from Seller to NSP and represent Facility level data:

Description	Units
AGC Set-Point (echo)	MW
Power demand	MW
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Number of turbines online and running	Integer
AGC Status	Remote/Local

3. Response times and limitations of Facility in regards to AGC

The following protocols outline the expectations for responding to the AGC Set-Point. Except in the case of the [Frequency of Changes], these protocols will be generally bound by the manufacturers' specifications for the equipment that Seller has chosen for the Facility.

a. Allowable Variances in Excess of AGC Set-Point. Once the Facility has reached the AGC Set-Point, there may be variances in excess of such set-point up to two percent (2%) on average as measured during a 10-minute period. These variances are due to changing wind conditions versus the manufacturer's specifications for responding to those new conditions.

b. Frequency of Changes. NSP may send a new AGC Set-Point to the Facility as frequently as the Wind Turbine manufacturer specifications allow.

c. Range of AGC Set-Point. The range of set point values can be between zero percent (0%) and one-hundred percent (100%) of Park Potential.

4. Backup Communications

In the event of an AGC failure, NSP and Seller shall communicate via telephone in order to correct the failure.

DATA COLLECTION

1. Data

At least two months prior to the Refurbishing Commercial Operation Date, Seller will deliver to NSP a report showing (i) manufacturer, model, and year of all Wind Turbines and meteorological instrumentation and (ii) the latitude, longitude and hub height at every Wind Turbine and meteorological tower.

Beginning upon the Refurbishing Commercial Operation Date, Seller shall transmit and provide to NSP the real-time data set forth below, refreshed in approximately four-ten (4-10) second intervals with regard to its generation of Renewable Energy at the Facility:

a. Five data points from each Wind Turbine:

1. Turbine generation (kW)
2. Wind Speed (meters per second – mps)
3. Turbine Availability
4. Wind Direction (in degrees relative to true north)
5. Temperature (Celsius)

b. Five data points from each Meteorological Tower:

1. Wind Speed** (mps)
2. Wind Direction** (degrees relative to true north)
3. Temperature (Celsius)
4. Pressure (mb)
5. Air Density (kg/m^3)

** = at all metered heights.

c. In addition to the other requirements for data collection, Seller shall install, maintain, and operate at least one meteorological tower that is installed at hub height and is placed upstream of the prevailing wind path. The data stream from this meteorological tower to NSP's PI System must be reliable during periods of transmission-related curtailments and must include battery back-up at the meteorological tower and a local source of electricity to power the PI System and interconnectivity between the Facility and NSP during transmission outages.

d. Seller shall provide a map and key for each Wind Turbine sufficient to allow NSP to correlate the data received through the PI System to each individual Wind Turbine.

2. Forecasting Requirements

a. Not later than 5:00 a.m. Central Prevailing Time (C.P.T.) on each Day, Seller shall post an availability and production forecast for the Facility through 11:00 p.m. on the following Day. The forecast shall be submitted through an availability forecast system specified by NSP to Seller. Prior to the Refurbishing Commercial Operation Date, NSP shall provide Seller with information necessary for Seller to access the chosen availability forecast system.

b. If any events or circumstances reduce the forecasted availability of the Facility by 5 MW or more, such reduction shall be (1) communicated to the real-time operator via telephone with (2) immediate update to the availability forecast in the availability forecast system. For example:

i. A disturbance at a 100.5 MW (67 x 1.5 MW wind turbines) wind plant causes 26 wind turbines (39 MW) to become unavailable. Only two turbines were planned to be down for maintenance (3 MW). The expected reduction in the available capacity is 39 MW; exceeding the 5-MW requirement. A phone call to real-time operations with immediate update of the availability forecast is required. At the time of the outage, the estimated expected duration was thought to be six hours. Three hours into the outage, it became known that the 26 turbines would be available in an hour. A phone call notifying real-time of the change in availability is required with a coincident update in the availability forecast system.

ii. A disturbance at a 10 MW (8 x 1.25 MW turbines) wind plant forces four turbines (5 MW) off-line. Because the disturbance equals 5 MW, a phone call to real-time operations with immediate update of the availability forecast is required. If the disturbance had only affected three turbines (3.75MW), then no immediate action would be necessary.

iii. A 20 MW (20 x 1 MW turbines) wind plant is off-line for transmission maintenance. The maintenance work is completed two hours ahead of the projected completion. Because the change is greater than 10 MW, prior to coming on-line, a phone call is required coincident with an update to the availability forecast system to indicate the new availability.

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THIRD AMENDMENT TO
RENEWABLE ENERGY PURCHASE AGREEMENT (C-BED)
BETWEEN NORTHERN STATES POWER COMPANY AND JEFFERS WIND 20, LLC

This Amendment No. 3 to Renewable Energy Purchase Agreement (C-BED) (the "Third Amendment") is entered into as of this 26 day of October, 2018 ("Effective Date"), by and between Northern States Power Company, a Minnesota corporation, ("NSP" or "Company") with a principal place of business at 401 Nicollet Mall, Minneapolis, Minnesota 55401, and Jeffers Wind 20, LLC, a Minnesota limited liability company ("Seller"), with a principal place of business at 133 Federal Street, Suite 1202, Boston, MA 02110. Seller and NSP are hereinafter referred to individually as a "Party" and collectively as the "Parties."

WITNESSETH:

WHEREAS, Seller and NSP are parties to that certain Renewable Energy Purchase Agreement (C-BED) dated as of July 31, 2006, as amended by that certain Amendment No. 1 to Power Purchase Agreement dated as of October 10, 2006, and that certain Second Amendment to Renewable Energy Purchase Agreement dated as of December 14, 2009 (as amended, the "REPA");

WHEREAS, Seller has informed NSP that it intends to perform major maintenance on and partial refurbishment of the Facility that includes the installation of new turbines and related equipment in order to improve and increase the output of electricity generated at the Facility;

WHEREAS, in connection with such refurbishment, the Parties desire to further amend the REPA as set forth herein to address the pricing of additional Renewable Energy enabled by the refurbishment project and other matters as set forth herein, by executing and delivering this Third Amendment.

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the sufficiency and adequacy of which are hereby acknowledged, the Parties hereby agree as follows:

1. **Defined Terms and Phrases**. The capitalized terms and phrases used in this Third Amendment shall have the meaning stated in the REPA. Other terms and phrases used in this Third Amendment but not defined in the REPA shall have the meanings set forth herein, or as commonly used in the English language and, where applicable, Good Utility Practice.

2. **Recitals**. The "Whereas" clauses recited above contain material terms of this Third Amendment and are incorporated herein by reference as if they are set forth herein.

3. **Amendments to REPA**. Commencing on the Effective Date of this Third Amendment the REPA shall be amended as follows:

a. **Section 1.4**. Section 1.4 shall be amended to add new subsection (C) which states:

> "(C) NSP and Seller acknowledge and agree that the amendments agreed to in this Third Amendment are consistent with Seller's obligations to qualify as a C-BED project under that statute, as it existed at the time the REPA was entered into. These amendments, including the downward adjustment to the price and the downward adjustment to the Committed Renewable Energy are consistent with the commitments of the REPA. Such

new pricing and production commitments shall be deemed to be consistent with Section 8.2 of the REPA and shall be implemented in lieu of the "Non-C-BED Rate" contemplated under the REPA.

b. **Section 1.5**. The following definitions shall be added to Section 1.5 in the appropriate alphabetical position:

"AGC" or "Automatic Generation Control" means the equipment and capability of an electric generation facility automatically to adjust the generation quantity within the applicable Balancing Authority with the purpose of interchange balancing and specifically, the Facility's capability of accepting an AGC Set-Point electronically, and the automatic adjustment and regulation of the Facility's energy production via the SCADA System.

"AGC Protocols" means the protocols for AGC included in Exhibit K - AGC Protocols; Data Collection; Technical Specifications, as such protocols may be modified from time to time in accordance with Section 10.7.

"AGC Remote/Local" means a handshake electronic signal sent from the Facility to the EMCC AGC system, and from the EMCC AGC system to the Facility, indicating the Facility is receiving AGC Set-Point locally (from the Facility) or remotely (EMCC AGC system) and is following that AGC Set-Point.

"AGC Set-Point" means the Company-generated analog or digital signal sent by the SCADA System to the Facility, representing the quantity of Renewable Energy to be generated by the Facility. The AGC Set-Point is calculated by the EMCC AGC system and communicated electronically to the Facility via the SCADA System.

"Energy Markets Control Center" or "EMCC" means Company's merchant representatives responsible for dispatch of generating units, including the Facility.

"ERO" means the Electric Reliability Organization certified by FERC pursuant to Section 215 of the Federal Power Act or any successor organization. The certified ERO as of the date of this PPA is Midcontinent Independent System Operator, Inc. (MISO).

"ND PSC" means the North Dakota Public Service Commission.

"Park Potential" means the number of MW that depicts Seller's real time calculation of the Potential Energy capable of being provided by the Facility to Company at the Point of Delivery. Park Potential shall be calculated using the best-available data obtained through Commercially Reasonable methods; and shall be dependent upon measured wind speeds, power curves, Wind Turbine availability, and derate(s) and transmission line losses, and any other adjustment necessary to accurately reflect the Potential Energy at the Point of Delivery. Park Potential should be provided to the Company in real time through the Company's SCADA System in accordance with the AGC Protocols.

"PI System" means the "plant information" system for the Facility, as described and implemented in Exhibit K - AGC Protocols; Data Collection; Technical Specifications.

"Potential Energy" for any period of time means the MWh of energy that the Facility is

actually capable of delivering to the Point of Delivery by virtue of the Park Potential during such period.

"PUC Approval" has the meaning set forth in Section 6.3.

"Refurbishing Commercial Operation Date" means the date that the Refurbished Facility achieves Commercial Operation.

"Refurbishing Commercial Operation Milestone" means the Construction Milestone for the Refurbishing Commercial Operation Date as specified in Section 4.9.

"Refurbishing Construction Milestones" means the milestones set forth in Section 4.9.

"Refurbished Facility" means the Facility as it may be reconstructed and reconfigured as a result of Seller's refurbishment activities.

c. **Section 3.3**. Section 3.3 shall be amended by adding new subsection (C) as follows:

"(C) Seller shall construct the Refurbished Facility in accordance with Good Utility Practice(s) and the Interconnection Agreement. During Commercial Operation of the Refurbished Facility, Seller shall maintain the Refurbished Facility according to Good Utility Practice(s), the Interconnection Agreement, and this REPA as amended."

d. **Article 4**. Article 4 shall be amended by adding a new Section 4.9 as follows:

4.9 Refurbished Facility.

(A) Applicability of Article 4 to the Refurbished Facility. The terms of Sections 4.5 - 4.8 of the REPA shall apply to the Refurbished Facility to the extent necessary for NSP reasonably to confirm that the Refurbished Facility can be and is constructed in a manner consistent with the obligations imposed on the Facility under the REPA and it can and does operate in a manner consistent with achieving Commercial Operation as required in such sections. To the extent that the terms of Sections 4.5 – 4.8 of the REPA conflict with this Third Amendment, the terms of this Third Amendment will control.

(B) Refurbishing Construction Milestones. In order to achieve the Refurbishing Commercial Operation Date by the Refurbishing Commercial Operation Milestone, the Parties agree to meet the following Refurbishing Construction Milestones:

Refurbishing Construction Milestone	**Date**
PUC Approval	No later than March 31, 2019
Receipt of all Permits and other authorizations to commence construction and commencement of construction of the Refurbished Facility	No later than June 30, 2020
Refurbishing Commercial Operation	No later than December 31, 2020

Milestone	

(C) Refurbishing Commercial Operation Date. Unless otherwise agreed by the Parties, the Facility shall achieve the Refurbishing Commercial Operation Date and shall be fully capable of reliably producing Renewable Energy as contemplated by this Third Amendment and delivery such Renewable Energy to NSP at the Point of Delivery, no later than the Refurbishing Commercial Operation Milestone. Seller shall comply with the Conditions to Commercial Operation set forth in Section 4.7 of the REPA to the full extent feasible for the Refurbished Facility. All references in such section shall be deemed to be applicable to the Refurbished Facility as if such term had been used in that section.

(D) Facility Contracts. Upon reasonable request by NSP, Seller shall provide NSP with reasonable evidence that it has the capability to finance construction of the Refurbished Facility. Information that is commercially sensitive, confidential or proprietary may be redacted from documents provided to NSP pursuant to this paragraph. Further, upon reasonable request by NSP, Seller shall provide sufficient information for NSP to be reasonably assured that Seller has contracted with financially responsible vendors as part of the Refurbished Facility construction process.

(E) Committed Renewable Energy During Construction of Refurbished Facility. Prior to the Refurbishing Commercial Operation Milestone, the Committed Renewable Energy shall be as set forth in Section 7.2 of the REPA prior to any modification by this Third Amendment.

(1) During the period of active construction of the Refurbished Facility, estimated to be approximately 6 months prior to the Refurbishing Commercial Operation Date, the Committed Renewable Energy set forth in Section 7.2 and related obligations shall be suspended and of no effect and the actual production during such months shall not be used for any purpose in calculating production or Seller's obligations to meet the Committed Renewable Energy amount. Seller shall provide NSP with written notice at least ten (10) days prior to starting construction on the Refurbished Facility ("Construction Notice").

(2) From and after the Refurbished Commercial Operation Date, the Committed Renewable Energy amount shall be as set forth in Section 7.2 as amended by this Third Amendment and shall apply to Seller's commitments under the REPA on a going-forward basis. For purposes of calculating Seller's historical production to supply the Committed Renewable Energy (including compliance with Section 12.1(D)(6)), the following shall apply:

(a) For those months prior to the active construction of the Refurbished Facility, the terms of the REPA shall apply unchanged.

(b) For those months during active construction of the Refurbished Facility (i.e. between the date identified in the Construction Notice and the Refurbishing Commercial Operation Date), in which the Committed Renewable Energy amount was suspended, the Facility shall be deemed to have produced and

delivered Renewable Energy in amounts equal to 100% of the Committed Renewable Energy amount, calculated on a monthly basis (i.e., 16,000 MWh/month), including partial months.

(c) From and after the Refurbishing Commercial Operation Date, the Committed Renewable Energy shall be calculated in amounts set forth in Section 7.2, as amended by this Third Amendment.

e. **Section 7.2**. Section 7.2 of the REPA is deleted in its entirety and replaced with the following:

7.2 Committed Renewable Energy. Except as otherwise provided in Section 4.9, Committed Renewable Energy prior to the Refurbishing Commercial Operation Date is one-hundred-eighty-four thousand, megawatt hours (184,000 MWh) of Renewable Energy delivered to NSP in any Commercial Operation Year. From and after the Refurbishing Commercial Operation Date, the Committed Renewable Energy is one-hundred seventy-five thousand three hundred megawatt hours (175,300 MWh) of Renewable Energy delivered to NSP in any Commercial Operation Year.

f. **Article 8**. As of the Refurbishing Commercial Operation Date, Article 8 and Exhibit 1-A of the REPA shall be deleted in their entirety and replaced as set forth below. For the avoidance of doubt, the terms of Article 8 shall not be modified by this Third Amendment prior to the Refurbishing Commercial Operation Date.

8.1 Payment and Curtailment.

(A) Commencing on the Refurbishing Commercial Operation Date, NSP shall pay Seller for Renewable Energy delivered to NSP by Seller to the Point of Delivery at a Renewable Energy Payment Rate equal to [redacted] for the Committed Renewable Energy, without escalation for the remainder of the Term. As of the Refurbishing Commercial Operation Date, Exhibit 1-A of the REPA is deleted and of no further force and effect. The Parties agree that the Committed Renewable Energy payment rate includes compensation for the Environmental and Renewable Energy Credits associated with the Committed Renewable Energy and that NSP is entitled to obtain and utilize any and all such Environmental and Renewable Energy Credits at no additional cost under this REPA.

(B) Commencing on the Refurbishing Commercial Operation Date of the Refurbished Facility, Seller shall have no obligation to sell and NSP shall have no obligation to buy Renewable Energy generated by the Refurbished Facility that is in excess of the Committed Renewable Energy ("Excess Energy") in any Commercial Operation Year, other than as set forth below.

(1) Seller may elect upon written Notice to sell and deliver and NSP shall purchase and accept Excess Energy from the Refurbished Facility.

(2) For any Excess Energy delivered by Seller to NSP at the Point of Delivery in a Commercial Operation Year, NSP shall pay Seller at an Excess Energy payment rate equal to the MISO Day-Ahead Energy Market clearing price at the commercial node designated as NSP.jeffers2. The Parties agree that the Excess Energy payment rate excludes compensation for the Environmental and Renewable Energy Credits associated with the Excess Energy and that Seller is entitled to retain and utilize any and all such Environmental and Renewable Energy Credits. Seller shall

reimburse NSP to the full extent NSP incurs any cost relating to any Environmental and Renewable Energy Credits associated with Excess Energy now or in the future, including any cost associated with creation or transfer of such Environmental and Renewable Energy Credits or any cost assessed on NSP by any third party for purpose of tracking or reporting on the same.

g. **Section 13.6**. Section 13.6 of the Second Amendment shall be deleted in its entirety and replaced with the following:

13.6. Facility Operation and Administration.

(A) Seller shall staff, control, and operate the Facility consistent with Good Utility Practice, Exhibit K – AGC Protocols; Data Collection; Technical Specifications; and this REPA. Personnel of Seller shall be continuously available via telephone or other electronic means with (i) the capability of remotely starting, operating, and stopping the Facility within 10 minutes, and (ii) the ability to be present at the Site within 30 minutes.

(B) Seller shall comply with Good Utility Practice, the requirements of all Governmental Authorities and all reasonable requirements of NSP in the operation of the Facility. By way of example only, Seller shall perform all capacity testing of the Facility and related reporting, as and when required by Governmental Authorities.

(C) Seller shall provide to NSP a day-ahead availability forecast in accordance with Exhibit K – AGC Protocols; Data Collection; Technical Specifications, and any other reporting requirements required for compliance with NERC reliability standards. NSP shall forward Seller's forecast to the applicable local reliability coordinator on Seller's behalf, *provided, however,* that Seller shall remain responsible to ensure the timeliness and accuracy of forecasts and any changes to the real-time or forecast availability of the Facility. If, and to the extent that, the ERO modifies the forecasting or other reporting requirements imposed on NSP or the Facility, Seller shall timely provide required data to NSP or the ERO, as applicable.

(D) Seller shall communicate all data necessary for NSP to integrate the Facility into NSP's EMCC in real time through the Facility's SCADA System in accordance with Exhibit K – AGC Protocols; Data Collection; Technical Specifications. Seller shall maintain the Facility's SCADA System so that it is capable of interfacing with and reacting to NSP's AGC Set-Point and responding to signals from NSP's EMCC in accordance with the AGC Protocols.

(E) Seller shall use commercially reasonable efforts to adjust the real time Park Potential of the Facility when NSP communicates to Seller a measured difference of plus or minus two percent between the metered Renewable Energy and Park Potential, during periods when generation is not curtailed. In the event that Park Potential is not a reliable proxy for Potential Energy, Potential Energy shall be calculated as the aggregate energy available for delivery at the Point of Delivery using the best available data obtained through commercially reasonable methods; and shall be dependent upon measured wind speeds, power curves, Wind Turbine availability, and derate(s) and transmission line losses, and any other adjustment necessary to accurately reflect the Facility's capability to produce and deliver energy to the Interconnection Point.

(F) From and after the Effective Date of the Third Amendment, Seller shall provide NSP, at Seller's expense, real time performance and meteorological data for all Wind Turbines and

meteorological towers at the Facility in accordance with Exhibit K – AGC Protocols; Data Collection; Technical Specifications for the Term of this REPA. Seller shall maintain Seller-owned data collection systems that are compatible with NSP's PI System. Seller shall ensure that real time communications capabilities are available and maintained for transmission to NSP's PI System. Seller shall ensure that all meteorological equipment at a minimum meets the specifications set forth in Exhibit K – AGC Protocols; Data Collection; Technical Specifications. NSP shall have the right to disclose data gathered through NSP's PI System publicly; provided, however, that such data is (i) masked to obscure the origin of the data and (ii) aggregated so that the data cannot be correlated and used by competitors of Seller and/or the supplier of the Wind Turbines.

(G) Accreditation. NSP has certain planning, operating, and reporting requirements. Seller shall complete at its own expense all applicable testing and reporting requirements for the Facility, including any required capacity testing.

h. **Section 6.3**. Section 6.3 shall be added as follows:

6.3 Regulatory Approval of Third Amendment. NSP shall have the right to seek PUC Approval of the Third Amendment as set forth in this Section 6.3.

(A) No later than 60 Days after the Effective Date, NSP may apply to the MPUC and/or the NDPSC for PUC Approval. If NSP fails to apply for PUC Approval within 75 Days following the date of this Third Amendment, NSP shall be deemed to have waived its right to obtain PUC Approval from that jurisdiction. If NSP fails to apply for PUC Approval from either applicable jurisdiction, this Third Amendment shall remain in full force and effect thereafter.

(B) If NSP applies for PUC Approval, NSP shall use commercially reasonable efforts to obtain PUC Approval as soon as reasonably practicable. Seller shall reasonably cooperate with NSP's efforts to obtain PUC Approval.

(1) Seller shall make commercially reasonable effort to make available, upon NSP's reasonable request, access to any personnel of Seller and any records relating to the Facility to the extent not protected by confidentiality or non-disclosure agreements, statutes, or regulations and to the extent that NSP requires the same for such PUC Approval, to the extent such approval may be required. NSP shall not reimburse Seller for any expenses with respect thereto incurred by Seller.

(2) If NSP applies for PUC Approval, NSP shall reasonably seek to obtain PUC Approval as soon as practicable and in any event not later than March 31, 2019. Each Party shall each have the right to terminate this Third Amendment, without any further financial or other obligation to the other Party as a result of such termination, by notice to the other Party at any time: (i) within 30 Days following issuance of a written order by the MPUC rejecting PUC Approval, or granting PUC Approval with conditions that are unacceptable to the terminating Party in its sole discretion; (ii) if the MPUC has not issued a written order granting or rejecting PUC Approval within 180 Days following NSP's application(s) for PUC Approval; (iii) at any time within 30 Days following timely appeal by any party with standing, of a written order granting PUC Approval; or (iv) by March 31, 2019.

(3) For purposes of this REPA, "PUC Approval" means, as applicable a written order of (i) the MPUC, which makes an affirmative determination that the Third

Amendment is reasonable and prudent and/or (ii) the ND PSC, which makes an affirmative advance determination of prudence of NSP's acquisition of the resource, and in either case that all costs incurred under this Third Amendment are recoverable from NSP's retail customers pursuant to applicable law, subject only to the requirement that the MPUC retain ongoing prudency review of NSP's performance and administration of the REPA.

4. **Costs and Expenses**.

a. Seller hereby agrees to reimburse NSP for its direct, documented expenses incurred in connection with the execution of this Third Amendment, including regulatory and legal expenses associated with negotiating and finalizing this Third Amendment. Such reimbursement shall be limited to a maximum amount of Sixty Five Thousand Dollars ($65,000) and shall be a one-time payment made to NSP upon submission to Seller of documentation of such expenses.

b. Beginning with the end of the first Contract Year that follows the first Refurbishing Commercial Operation Date, Seller hereby agrees to reimburse NSP on an annual basis for its direct, documented additional expenses incurred in connection with the administration of the REPA as a result of this Third Amendment. Such annual reimbursement shall be limited to a maximum of Five Thousand Dollars ($5,000) per year and shall be paid to NSP upon submission to Seller of documentation of such additional expenses.

5. **Exhibit Index.** As of the Effective Date, the following Exhibit is added to the list of Exhibits following the Table of Contents of the REPA:

Exhibit K – AGC Protocols; Data Collection; Technical Specifications

6. **Exhibit B**. As of the Refurbishing Commercial Operation Date, Exhibit B shall be deleted in its entirety and replaced with the technical specifications to be provided by Seller with delivery of the Construction Notice.

7. **Exhibit K – AGC Protocols; Data Collection; Technical Specifications**. As of the Effective Date, Exhibit K attached hereto is added as "Exhibit K – AGC Protocols; Data Collection; Technical Specifications" as an exhibit to the REPA.

8. **Option for NSP to Purchase Refurbished Facility**. The Parties acknowledge that they have entered into an option agreement as of the Effective Date for NSP to purchase the Refurbished Facility as of the Refurbishing Commercial Operation Date ("Purchase Option Agreement"). This Third Amendment is independent of the Purchase Option Agreement and, as a separate agreement, shall survive the modification or termination of the Purchase Option Agreement. In the event of any conflict between this Third Amendment and the Purchase Option Agreement, this Third Amendment shall control with respect to all matters relating to the REPA.

9. **General**.

a. **Representations Regarding this Third Amendment**. By its execution hereof, each Party represents and warrants that it is authorized to enter into this Third Amendment, that this Third Amendment does not conflict with any contract, lease, instrument, or

other obligation to which it is a party or by which it is bound, which conflict could reasonably be expected to have a material adverse effect on the ability of such Party to perform its obligations hereunder, and that this Third Amendment represents its valid and binding obligation, enforceable against it in accordance with its terms.

b. **No Other Amendments**. Except as specifically provided in this Third Amendment, no other amendments, revisions, or changes are made or have been made to the REPA. All other terms and conditions of the REPA remain in full force and effect and the Parties hereby ratify and confirm their rights, obligations, and representations under the REPA, as amended hereby.

c. **Conforming References**. Upon the effectiveness of this Third Amendment, each reference in the REPA to "this Agreement, "there under", "hereto", "herein", or words of like import, shall mean and be a reference to the REPA as amended hereby.

d. **Counterparts**. This Third Amendment may be executed in one or more counterparts, each of which shall be considered an original instrument, but all of which shall be considered one and the same agreement, and shall become binding when one or more counterparts have been signed by each of the Parties and delivered to each of them.

e. **Applicable Law**. This Third Amendment shall be governed by the laws of the State of Minnesota (without reference to choice of law doctrine), except to the extent the Parties' rights and obligations are required to be governed by United States Federal law, then such rights and obligations by United States Federal law. The Parties hereby submit to the jurisdiction of the courts of the State of Minnesota, and venue is hereby stipulated as Minneapolis, Minnesota.

f. **Effectiveness of Third Amendment**. The amendments to the REPA contemplated by this Third Amendment shall become effective as of the receipt or waiver of PUC Approval as set forth in this Third Amendment.

[Signatures Follow]

SELLER

Jeffers Wind 20 LLC

By: _____
Name: Paul Gaynor
Title: Chief Executive Officer of Mission Minnesota Wind III, LLC, as managing member

NSP

NSP Public Service Company,
a Minnesota corporation

By: _____
Name:
Title:

Tim Kawakami
Director, Purchased Power
Xcel Energy Services Inc.
Authorized signatory for Northern States Power Company,
A Minnesota corporation

Exhibit K

AGC Protocols; Data Collection; Technical Specifications

AGC

1. AGC Communications between NSP and Seller

NSP will receive and send AGC Set-Point and related data over an analog or digital line. The data points covered under this REPA, as described below, may overlap data requirements for MISO or NSP's applicable forecasting group.

2. AGC Data Points to be sent from Seller to NSP via SCADA

The following data points shall be transmitted via SCADA from Seller to NSP and represent Facility level data:

Description	Units
AGC Set-Point (echo)	MW
Power demand	MW
Actual power	MW
Park Potential	MW
Actual reactive power	Mvars
Average Voltage	kV
Number of turbines online and running	Integer
AGC Status	Remote/Local

3. Response times and limitations of Facility in regards to AGC

The following protocols outline the expectations for responding to the AGC Set-Point. Except in the case of the [Frequency of Changes], these protocols will be generally bound by the manufacturers' specifications for the equipment that Seller has chosen for the Facility.

a. Allowable Variances in Excess of AGC Set-Point. Once the Facility has reached the AGC Set-Point, there may be variances in excess of such set-point up to two percent (2%) on average as measured during a 10-minute period. These variances are due to changing wind conditions versus the manufacturer's specifications for responding to those new conditions.

b. Frequency of Changes. NSP may send a new AGC Set-Point to the Facility as frequently as the Wind Turbine manufacturer specifications allow.

c. Range of AGC Set-Point. The range of set point values can be between zero percent (0%) and one-hundred percent (100%) of Park Potential.

4. Backup Communications

In the event of an AGC failure, NSP and Seller shall communicate via telephone in order to correct the failure.

DATA COLLECTION

1. Data

At least two months prior to the Refurbishing Commercial Operation Date, Seller will deliver to NSP a report showing (i) manufacturer, model, and year of all Wind Turbines and meteorological instrumentation and (ii) the latitude, longitude and hub height at every Wind Turbine and meteorological tower.

Beginning upon the Refurbishing Commercial Operation Date, Seller shall transmit and provide to NSP the real-time data set forth below, refreshed in approximately four-ten (4-10) second intervals with regard to its generation of Renewable Energy at the Facility:

a. Five data points from each Wind Turbine:

1. Turbine generation (kW)
2. Wind Speed (meters per second – mps)
3. Turbine Availability
4. Wind Direction (in degrees relative to true north)
5. Temperature (Celsius)

b. Five data points from each Meteorological Tower:

1. Wind Speed** (mps)
2. Wind Direction** (degrees relative to true north)
3. Temperature (Celsius)
4. Pressure (mb)
5. Air Density (kg/m^3)

** = at all metered heights.

c. In addition to the other requirements for data collection, Seller shall install, maintain, and operate at least one meteorological tower that is installed at hub height and is placed upstream of the prevailing wind path. The data stream from this meteorological tower to NSP's PI System must be reliable during periods of transmission-related curtailments and must include battery back-up at the meteorological tower and a local source of electricity to power the PI System and interconnectivity between the Facility and NSP during transmission outages.

d. Seller shall provide a map and key for each Wind Turbine sufficient to allow NSP to correlate the data received through the PI System to each individual Wind Turbine.

2. Forecasting Requirements

a. Not later than 5:00 a.m. Central Prevailing Time (C.P.T.) on each Day, Seller shall post an availability and production forecast for the Facility through 11:00 p.m. on the following Day. The forecast shall be submitted through an availability forecast system specified by NSP to Seller. Prior to the Refurbishing Commercial Operation Date, NSP shall provide Seller with information necessary for Seller to access the chosen availability forecast system.

b. If any events or circumstances reduce the forecasted availability of the Facility by 5 MW or more, such reduction shall be (1) communicated to the real-time operator via telephone with (2) immediate update to the availability forecast in the availability forecast system. For example:

i. A disturbance at a 100.5 MW (67 x 1.5 MW wind turbines) wind plant causes 26 wind turbines (39 MW) to become unavailable. Only two turbines were planned to be down for maintenance (3 MW). The expected reduction in the available capacity is 39 MW; exceeding the 5-MW requirement. A phone call to real-time operations with immediate update of the availability forecast is required. At the time of the outage, the estimated expected duration was thought to be six hours. Three hours into the outage, it became known that the 26 turbines would be available in an hour. A phone call notifying real-time of the change in availability is required with a coincident update in the availability forecast system.

ii. A disturbance at a 10 MW (8 x 1.25 MW turbines) wind plant forces four turbines (5 MW) off-line. Because the disturbance equals 5 MW, a phone call to real-time operations with immediate update of the availability forecast is required. If the disturbance had only affected three turbines (3.75MW), then no immediate action would be necessary.

iii. A 20 MW (20 x 1 MW turbines) wind plant is off-line for transmission maintenance. The maintenance work is completed two hours ahead of the projected completion. Because the change is greater than 10 MW, prior to coming on-line, a phone call is required coincident with an update to the availability forecast system to indicate the new availability.

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Strategist Modeling Assumptions and Outputs

I. Strategist Modeling Assumptions

1. Discount Rate and Capital Structure

The discount rate used for levelized cost calculations and the present value of modeled costs is 6.53 percent. The rates shown in Table 1 below were calculated by taking a weighted average of NSP jurisdictions from the April 2018 Corporate Assumptions Memo.

Table 1: Capital Structure

	Capital Structure	Allowed Return	Before Tax Electric WACC	After Tax Electric WACC
Long-Term Debt	45.60%	4.87%	2.22%	1.32%
Common Equity	52.50%	9.39%	4.93%	4.93%
Short-Term Debt	1.90%	2.85%	0.05%	0.05%
Total			**7.20%**	**6.30%**

2. Inflation Rates

The inflation rates are used for existing resources, generic resources, and other costs related to general inflationary trends in the modeling and are developed using long-term forecasts from Global Insight. The General inflation rate is from the "Chained Price Index for Total Personal Consumption Expenditures" published in the second quarter of 2018.

- General inflation – The inflation rate used for construction (capital) costs and any other escalation factor related to general inflationary trends is 2.0 percent.

3. Reserve Margin

The reserve margin at the time of MISO's peak is 8.4 percent. The coincidence factor between the NSP System and MISO system peak is 5 percent. Therefore, the effective reserve margin is:

$$(1 - 5\%) * (1 + 8.4\%) - 1 = 2.98\%.$$

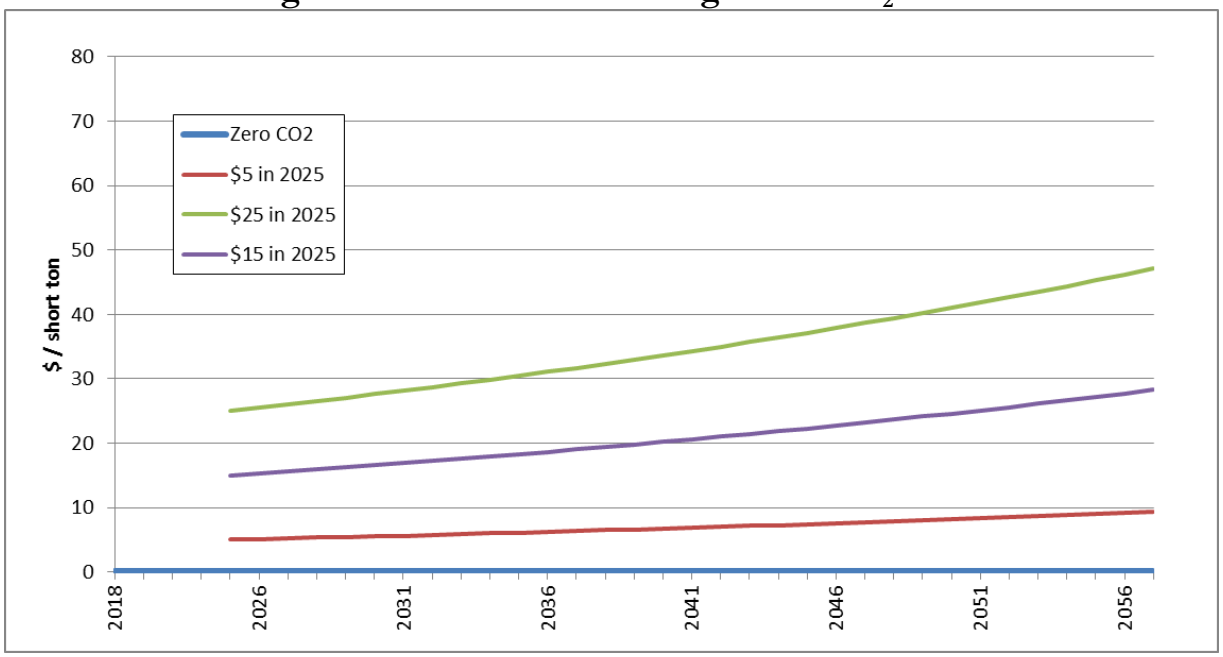
Table 2: Reserve Margin

Reserve Margin	
Coincidence Factor	5.00%
MISO Coincident Peak Reserve Margin %	8.40%
Effective RM Based on Non-coincident Peak	2.98%

4. Regulated CO_2 Costs

Figure 1 below shows the annual Regulated CO_2 Costs used in the analysis. The base assumption is $15 per short ton starting in 2022, which is the average of $5 per short ton and $25 per short ton. The range of Regulated CO_2 Costs is drawn from the Minnesota Public Utilities Commission's ORDER ESTABLISHING 2018 AND 2019 ESTIMATE OF FUTURE CARBON DIOXIDE REGULATION COSTS issued June 11, 2018 in Docket No. E999/CI-07-1199. All prices escalate at general inflation.

Figure 1: Carbon Dioxide Regulated CO_2 Cost



5. Externality Costs

The values of the criteria pollutants PM2.5, NOx and SO2 are derived from the "Low" and "High" (Base Case) values for each of the three locations, pursuant to the Commission's ORDER UPDATING ENVIRONMENTAL COST VALUES issued January 3, 2018 in Docket No. E-999/CI-14-643 (Order Point 2, pages 57-58). The values of the

criteria pollutants CO and Pb are derived from the "Low" and "High" (Base Case) values for each of the three locations. All prices are escalated to 2018 real $.

For plants located within 200 miles of Minnesota, it was decided that the NOx, PM2.5 and SO2 values would be selected based on the appropriate category Urban/Metro Fringe/Rural for each plant in question.

Table 3: Externality Costs

MPUC Externality Costs				
$2018 per short ton				
	Urban	Metro Fringe	Rural	<200mi
SO2	$6,116	$4,829	$3,643	$0
NOx	$2,934	$2,622	$2,110	$28
PM2.5	$10,697	$6,856	$3,654	$872
CO	$1.65	$1.17	$0.31	$0.31
Pb	$4,857	$2,562	$624	$624

The CO_2 values are derived from the above-referenced Orders. In the Base Case, the CO_2 values until 2025 are based on the "High" (externalities) Environmental Cost Values for CO_2. The Base Case CO_2 values from 2025 onwards are based on the "High" end of the range determined in the June 11th Order (see page 12 of the Order). All prices are escalated to 2018 real $ and escalate at general inflation (set at 2 percent per year) thereafter.

Table 4: Carbon Dioxide Externality Costs

MPUC CO_2 Externality Costs		
$ per short ton		
Year	Low	High
2018	9.09	42.76
2019	9.49	44.58
2020	9.90	46.45
2021	10.32	48.39
2022	10.77	50.38
2023	11.22	52.43
2024	11.69	54.55
2025	12.16	56.72
2026	12.67	58.97
2027	13.17	61.29
2028	13.70	63.67
2029	14.24	66.12
2030	14.80	68.64
2031	15.37	71.24
2032	15.97	73.91
2033	16.57	76.67
2034	17.21	79.50
2035	17.85	82.41
2036	18.52	85.41
2037	19.20	88.50
2038	19.91	91.68
2039	20.62	94.96
2040	21.38	98.32
2041	22.14	101.78
2042	22.94	105.34
2043	23.74	109.00
2044	24.58	112.76
2045	25.43	116.63
2046	26.33	120.61
2047	27.23	124.71
2048	28.17	128.92
2049	29.12	133.24
2050	30.12	137.69
2051	31.14	142.26
2052	32.18	146.97
2053	33.26	151.80
2054	34.36	156.76
2055	35.50	161.87
2056	36.66	167.11
2057	37.86	172.51

6. Demand and Energy Forecast

The Fall 2018 Load Forecast developed by the Xcel Energy Load Forecasting group is used. The forecast is shown with no DG solar reduction, as solar was modeled as a resource.

Table 5: Fall 2018 Demand and Energy Forecast

Demand (MW)					Energy (GWh)				
Year	Model Output	W/ Hist DSM, Building Code Adj	w DSM/Eff Adjustments	Final w EV Adjustments	Year	Model Output	W/ Hist DSM, Building Code Adj	w DSM/Eff Adjustments	Final w EV Adjustments
2018	10,415	9,241	9,151	9,152	2018	50,447	44,348	43,909	43,914
2019	10,424	9,313	9,131	9,136	2019	50,530	44,649	43,772	43,798
2020	10,499	9,399	9,146	9,156	2020	50,847	45,129	43,800	43,865
2021	10,559	9,497	9,173	9,191	2021	50,746	45,223	43,449	43,560
2022	10,621	9,623	9,226	9,251	2022	50,844	45,598	43,375	43,529
2023	10,684	9,719	9,251	9,285	2023	50,991	45,857	43,186	43,394
2024	10,755	9,831	9,291	9,329	2024	51,326	46,318	43,189	43,425
2025	10,842	9,949	9,338	9,376	2025	51,333	46,589	43,021	43,257
2026	10,939	10,101	9,418	9,456	2026	51,483	47,061	43,044	43,281
2027	11,038	10,287	9,533	9,571	2027	51,699	47,722	43,256	43,493
2028	11,140	10,494	9,669	9,706	2028	52,079	48,780	43,852	44,089
2029	11,232	10,634	9,737	9,775	2029	52,105	49,097	43,735	43,972
2030	11,320	10,795	9,827	9,864	2030	52,279	49,704	43,893	44,130
2031	11,418	10,940	9,899	9,937	2031	52,516	50,195	43,935	44,172
2032	11,518	11,065	10,044	10,082	2032	52,895	50,712	44,424	44,661
2033	11,619	11,204	10,201	10,239	2033	52,931	50,918	44,639	44,875
2034	11,717	11,333	10,331	10,369	2034	53,112	51,274	44,995	45,232
2035	11,813	11,443	10,441	10,478	2035	53,346	51,577	45,298	45,534
2036	11,912	11,568	10,566	10,604	2036	53,746	52,103	45,806	46,042
2037	12,006	11,675	10,672	10,710	2037	53,750	52,169	45,890	46,126
2038	12,100	11,769	10,766	10,804	2038	53,911	52,329	46,050	46,287
2039	12,197	11,867	10,864	10,902	2039	54,165	52,584	46,305	46,541
2040	12,301	11,970	10,968	11,005	2040	54,589	53,007	46,709	46,946
2041	12,396	12,065	11,063	11,101	2041	54,599	53,018	46,739	46,975
2042	12,488	12,157	11,155	11,192	2042	54,767	53,186	46,907	47,143
2043	12,581	12,250	11,248	11,285	2043	55,031	53,450	47,171	47,407
2044	12,693	12,362	11,360	11,398	2044	55,467	53,884	47,587	47,823
2045	12,765	12,434	11,432	11,469	2045	55,503	53,921	47,642	47,879
2046	12,851	12,520	11,518	11,556	2046	55,700	54,119	47,840	48,076
2047	12,947	12,616	11,614	11,652	2047	55,996	54,415	48,136	48,372
2048	13,035	12,705	11,703	11,741	2048	56,359	55,038	48,740	48,977
2049	13,124	12,794	11,792	11,830	2049	56,435	54,854	48,575	48,811
2050	13,213	12,883	11,881	11,919	2050	56,667	55,085	48,806	49,042
2051	13,302	12,972	11,970	12,008	2051	56,899	55,316	49,037	49,274
2052	13,391	13,062	12,059	12,097	2052	57,288	55,700	49,403	49,640
2053	13,480	13,151	12,148	12,186	2053	57,362	55,779	49,500	49,736
2054	13,595	13,265	12,263	12,301	2054	57,812	56,228	49,949	50,185
2055	13,684	13,355	12,352	12,390	2055	58,043	56,459	50,180	50,417
2056	13,773	13,444	12,441	12,479	2056	58,436	56,847	50,549	50,786
2057	13,862	13,533	12,531	12,568	2057	58,507	56,922	50,643	50,880

7. DSM Forecast

The DSM forecast corresponds to what was used in the 2018v2.0 Load Forecast assumes impacts expected at a 75 percent rebate level which equals roughly 1.5 percent of sales through the planning period and is what is embedded in the 2018v2 Load Forecast.

Table 6: DSM Forecast

Year	Energy (MWh)	Demand (MW)
2018	439	114
2019	877	229
2020	1,330	316
2021	1,774	402
2022	2,223	489
2023	2,671	576
2024	3,129	663
2025	3,568	750
2026	4,017	837
2027	4,465	924
2028	4,928	1,011
2029	5,362	1,097
2030	5,811	1,184
2031	6,259	1,271
2032	6,287	1,244
2033	6,279	1,216
2034	6,279	1,216
2035	6,279	1,216
2036	6,297	1,216
2037	6,279	1,216
2038	6,279	1,216
2039	6,279	1,216
2040	6,297	1,216
2041	6,279	1,216
2042	6,279	1,216
2043	6,279	1,216
2044	6,297	1,216
2045	6,279	1,216
2046	6,279	1,216
2047	6,279	1,216
2048	6,297	1,216
2049	6,279	1,216
2050	6,279	1,216
2051	6,279	1,216
2052	6,297	1,216
2053	6,279	1,216
2054	6,279	1,216
2055	6,279	1,216
2056	6,297	1,216
2057	6,279	1,216

8. Demand Response Forecast

The Load Management Forecast used was developed by the Xcel Energy Load Research group, 2018v4 vintage plus 406 MW of incremental generic DR starting in 2023. Table 7 below shows the July demand.

Table 7: 2018 Load Management Forecast

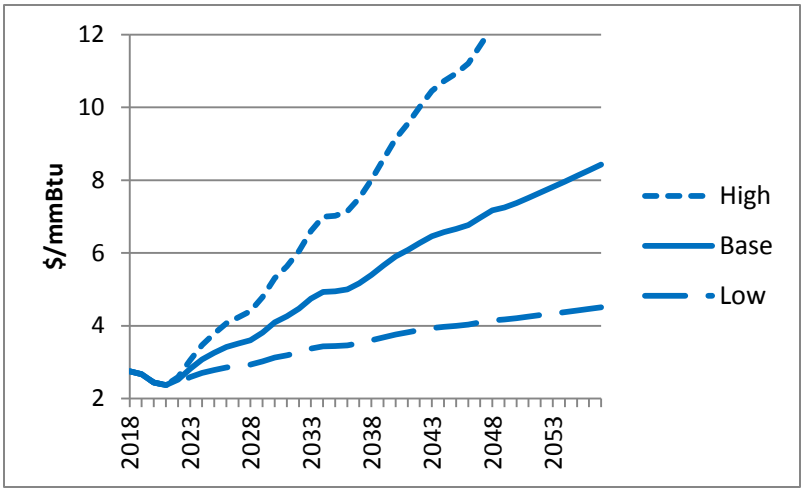
DR Forecast	
Year	July Demand (MW)
2018	899
2019	916
2020	932
2021	948
2022	962
2023	1,409
2024	1,413
2025	1,418
2026	1,423
2027	1,418
2028	1,408
2029	1,398
2030	1,388
2031	1,378
2032	1,369
2033	1,360
2034	1,351
2035	1,343
2036	1,335
2037	1,327
2038	1,319
2039	1,312
2040	1,304
2041	1,297
2042	1,291
2043	1,284
2044	1,277
2045	1,271
2046	1,265
2047	1,259
2048	1,252
2049	1,246
2050	1,240
2051	1,233
2052	1,227
2053	1,221
2054	1,214
2055	1,208
2056	1,202
2057	1,196

9. Natural Gas Price Forecasts

Henry Hub natural gas prices are developed using a blend of market information (New York Mercantile Exchange futures prices) and long-term fundamentally-based forecasts from Wood Mackenzie, Cambridge Energy Research Associates (CERA) and Petroleum Industry Research Associates (PIRA).

Gas Prices as of October 18, 2018 were used. High and low gas price sensitivities were performed by adjusting the growth rate up and down by 50 percent from the base natural gas cost forecast starting in year 2022.

Figure 2: Ventura Natural Gas Price Forecast and Sensitivities



10. Natural Gas Transportation Costs

Gas transportation variable costs include the gas transportation charges and the Fuel Lost & Unaccounted (FL&U) for all of the pipelines the gas flows through from the Ventura Hub to the generators facility. The FL&U charge is stated as a percentage of the gas expected to be consumed by the plant, effectively increasing the gas used to operate the plant, and is at the price of gas commodity being delivered to the plant. Table 13 contains gas transportation charges for generic thermal resources.

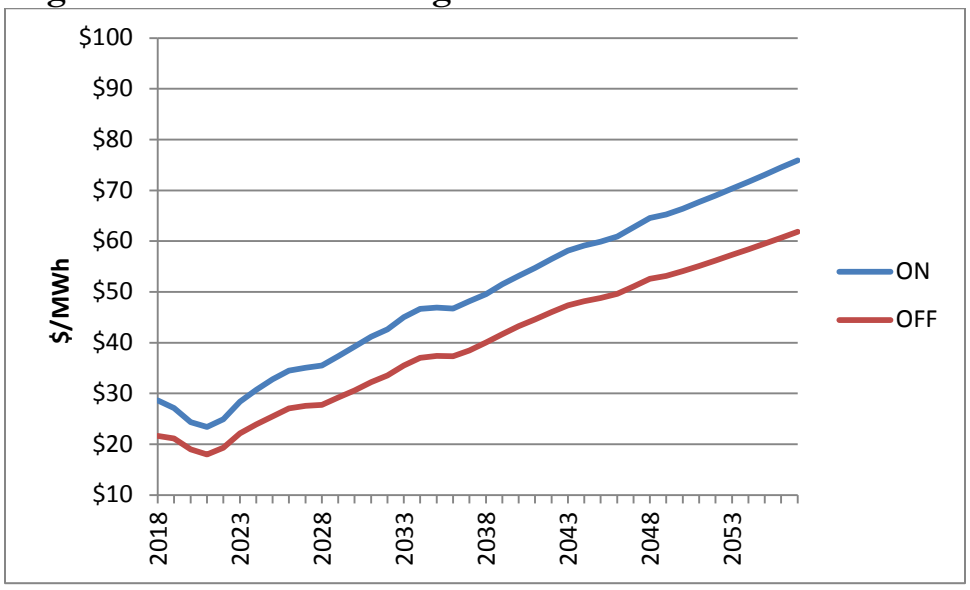
11. Natural Gas Demand Charges

Gas demand charges are fixed annual payments applied to resources to guarantee that natural gas will be available (normally called "firm gas"). Typically, firm gas is obtained to meet the needs of the winter peak as enough gas is normally available during the summer. Table 13 contains gas demand charges for generic thermal resources.

12. Electric Power Market Prices

In addition to resources that exist within the NSP System, the Company is a participant in the MISO Market. Electric power market power prices are developed from fundamentally-based forecasts from Wood Mackenzie, CERA and PIRA. Figure 3 below shows the market prices under zero cost CO_2 assumptions.

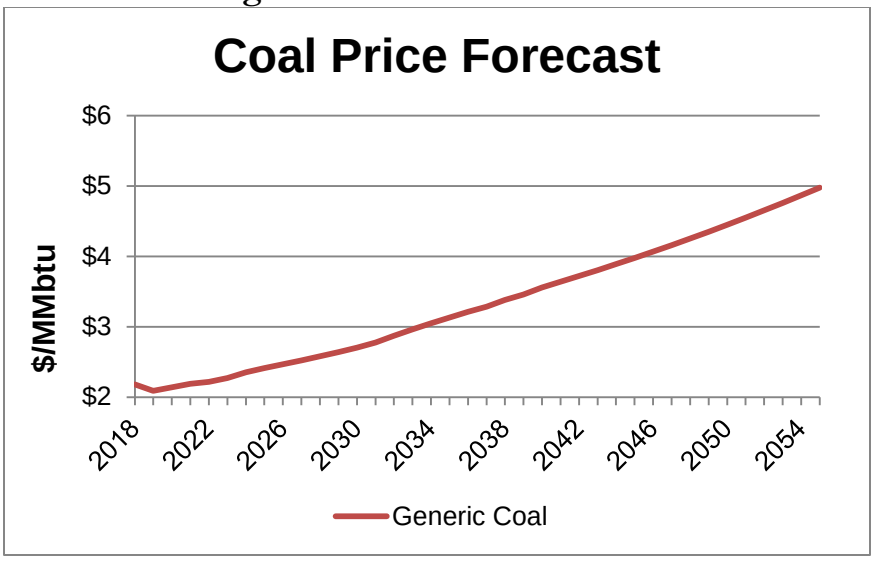
Figure 3: Minn Hub Average On and Off Peak Market Price



13. Coal Price Forecast

Coal price forecasts are developed using two major inputs: the current contract volumes and prices combined with current estimates of required spot volumes and prices. Typically coal volumes and prices are under contract on a plant by plant basis for a one to five year term with annual spot volumes filling the estimated fuel requirements of the coal plant based on recent unit dispatch. The spot coal price forecasts are developed from price forecasts provided by Wood Mackenzie, JD Energy, and John T Boyd Company, as well as price points from recent Request for Proposal (RFP) responses for coal supply. Layered on top of the coal prices are transportation charges, SO_2 costs, freeze control and dust suppressant, as required.

Figure 4: Coal Price Forecast



14. Surplus Capacity Credit

The credit is applied for all 12 months of each year and is priced at the avoided capacity cost of a generic combustion turbine.

Table 8: Surplus Capacity Credit

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
$/kW-mo	3.72	3.79	3.87	3.95	4.03	4.11	4.19	4.27	4.36	4.45
	2028	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**
$/kW-mo	4.54	4.63	4.72	4.81	4.91	5.01	5.11	5.21	5.31	5.42
	2038	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**	**2046**	**2047**
$/kW-mo	5.53	5.64	5.75	5.87	5.98	6.10	6.23	6.35	6.48	6.61
	2048	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**	**2055**	**2056**	**2057**
$/kW-mo	6.74	6.87	7.01	7.15	7.29	7.44	7.59	7.74	7.90	8.05

15. Transmission Delivery Costs

Generic 2x1 combined cycle (CC), generic combustion turbine (CT), generic wind and generic solar have assumed transmission delivery costs. Table 9 below shows the transmission delivery costs on a $/kW basis. The CC and CT costs were developed based on the average of several potential sites in the Minnesota. The general site

locations were investigated by Transmission Access for impacts to the transmission grid and expected resulting upgrade costs

Table 9: Transmission Delivery Costs

	$/kw
CC	$ 330
CT	$ 100
Wind	$ 200
Solar	$ 70

16. Interconnection Costs

Estimates of interconnection costs of the generic resources were included in the capital cost estimates.

17. Effective Load Carrying Capability (ELCC) Capacity Credit for Wind Resources

Existing wind units is based on current MISO accreditation. New wind additions are given a capacity credit equal to 15.6 percent of their nameplate rating per MISO 2017/2018 Wind Capacity Report.

18. ELCC Capacity Credit for Utility Scale Solar Photovoltaic (PV) Resources

Utility scale generic solar PV additions used in modeling the alternative plans were given a capacity credit equal to 50 percent of the AC nameplate capacity.

19. Spinning Reserve Requirement

Spinning Reserve is the on-line reserve capacity that is synchronized to the grid to maintain system frequency stability during contingency events and unforeseen load swings. The level of spinning reserve modeled is 182 MW and is based on a 12-month rolling average of spinning reserves carried by the NSP System within MISO.

20. Emergency Energy Costs

Emergency Energy Costs were assigned in the Strategist model if there were not enough resources available to meet energy requirements. The cost was set at $500/MWh.

21. Wind Integration Costs

Wind integration costs were priced based upon the results of the NSP System Wind Integration Cost Study. Wind integration costs contain five components:

1. MISO Contingency Reserves
2. MISO Regulating Reserves
3. MISO Revenue Sufficiency Guarantee Charges
4. Coal Cycling Costs
5. Gas Storage Costs

Table 10: Wind Integration Costs

Year	Integration $/MWh		Coal Cycling $/MWh	
	Wind	Solar	Wind	Solar
2018	0.00	0.00	0.00	0.00
2019	0.00	0.00	0.00	0.00
2020	0.41	0.41	0.00	0.00
2021	0.42	0.42	0.00	0.00
2022	0.43	0.43	0.00	0.00
2023	0.44	0.44	0.00	0.00
2024	0.44	0.44	0.00	0.00
2025	0.45	0.45	0.00	0.00
2026	0.46	0.46	0.00	0.00
2027	0.47	0.47	0.00	0.00
2028	0.48	0.48	0.00	0.00
2029	0.49	0.49	0.00	0.00
2030	0.50	0.50	0.00	0.00
2031	0.51	0.51	0.00	0.00
2032	0.52	0.52	0.00	0.00
2033	0.53	0.53	0.00	0.00
2034	0.54	0.54	0.00	0.00
2035	0.55	0.55	0.00	0.00
2036	0.56	0.56	0.00	0.00
2037	0.57	0.57	0.00	0.00
2038	0.59	0.59	0.00	0.00
2039	0.60	0.60	0.00	0.00
2040	0.61	0.61	0.00	0.00
2041	0.62	0.62	0.00	0.00
2042	0.63	0.63	0.00	0.00
2043	0.65	0.65	0.00	0.00
2044	0.66	0.66	0.00	0.00
2045	0.67	0.67	0.00	0.00
2046	0.69	0.69	0.00	0.00
2047	0.70	0.70	0.00	0.00
2048	0.71	0.71	0.00	0.00
2049	0.73	0.73	0.00	0.00
2050	0.74	0.74	0.00	0.00
2051	0.76	0.76	0.00	0.00
2052	0.77	0.77	0.00	0.00
2053	0.79	0.79	0.00	0.00
2054	0.80	0.80	0.00	0.00
2055	0.82	0.82	0.00	0.00
2056	0.84	0.84	0.00	0.00
2057	0.85	0.85	0.00	0.00

22. Wind Congestion Costs

Wind Congestion Costs were developed internally by Resource Planning using the MISO MTEP 2018 models and looking at the average congestion costs between representative wind bus locations and NSP.NSP. From the study, we included a congestion cost of $3.43 per MWh in 2020, escalating at 2 percent thereafter for all new wind projects.

Table 11: Wind Congestion Costs

	Wind Congestion $/MWh	
	Existing Resources	New Resources
2018	-	-
2019	-	-
2020	-	3.43
2021	-	3.50
2022	-	3.57
2023	-	3.64
2024	-	3.71
2025	-	3.79
2026	-	3.86
2027	-	3.94
2028	-	4.02
2029	-	4.10
2030	-	4.18
2031	-	4.27
2032	-	4.35
2033	-	4.44
2034	-	4.53
2035	-	4.62
2036	-	4.71
2037	-	4.80
2038	-	4.90
2039	-	5.00
2040	-	5.10
2041	-	5.20
2042	-	5.30
2043	-	5.41
2044	-	5.52
2045	-	5.63
2046	-	5.74
2047	-	5.86
2048	-	5.97
2049	-	6.09
2050	-	6.22
2051	-	6.34
2052	-	6.47
2053	-	6.60
2054		6.73
2055		6.86
2056		7.00
2057		7.14

23. Distributed Generation and Community Solar Gardens

The small solar inputs are based on the most recent Company forecast.

24. Assumption and Sensitivity Descriptions

The modeling uses the following assumptions and sensitivities. The Base Assumptions are combined with the Sensitivities to test the modeling results for critical variables.

Table 12: Assumption and Sensitivity Descriptions

Base Assumptions	Assumption Description
PVSC Base	All Strategist expansion plans are optimized under the PVSC Base assumption. PVSC Base includes the Regulated CO_2 Costs, Externality Costs, and Surplus Capacity Credit. Optimized expansion plans were also completed using the PVSC Reference assumption and the High Renewables Scenario. All Strategist outputs, except the Markets Off sensitivity, assume the modeling of MISO Energy Market interactions.
PVRR Base	This assumption removes Regulated CO_2 Costs, Externality Costs, and the Surplus Capacity Credit from the PVSC Base assumption. The following sensitivities were also ran using the PVRR assumption as the starting point: Low Gas, High Gas, Low Load, High Load, Markets off no dump, Markets off with dump, 3% Esc costs, 1% esc. costs.

Sensitivities	Sensitivity Description
Markets Off No Dump Credit	This sensitivity removes the modeling of the Company's hourly sales in the MISO Energy Market. No credit was applied for dump energy.
Markets Off With Dump Credit	This sensitivity removes the modeling of the Company's hourly purchases in the MISO Energy Market and allows for a credit of one half of the all hours market price for dump energy.
Low Gas Price	This sensitivity decreases the annual year-over-year percent change in natural gas prices by 50% starting in year 2022.
High Gas Price	This sensitivity increases the annual year-over-year percent change in natural gas prices by 50% starting in year 2022.
Low CO_2 Externality Costs All Years	This sensitivity removes the Regulated CO_2 Cost and models the Low Externality Price of CO_2 for the modeling period.
Low CO2 Externality Costs through 2024	This sensitivity uses the Low Externality Price of CO2 through 2024, then the low Regulated CO_2 Cost thereafter.
High CO_2 Externality Costs All Years	This sensitivity models the High Externality Price of CO_2 for the full modeling period.
Low Load	This sensitivity uses a minus one standard deviation from the base demand and energy forecast.
High Load	This sensitivity uses a plus one standard deviation from the base demand and energy forecast.
No CO2	This sensitivity assumes there are no Externality or Regulatory costs associated with CO2.

25. Owned Unit Modeled Operating Characteristics and Costs

Company owned units were modeled based upon their tested operating characteristics and historical or projected costs. Below is a list of typical operating and cost inputs for each company owned resource.

a. Retirement Date
b. Maximum Capacity
c. Current Unforced Capacity (UCAP) Ratings
d. Minimum Capacity Rating
e. Seasonal Deration
f. Heat Rate Profiles
g. Variable O&M
h. Fixed O&M
i. Maintenance Schedule
j. Forced Outage Rate
k. Emission rates for SO_2, NO_x, CO_2, Mercury and particulate matter (PM)
l. Contribution to spinning reserve
m. Fuel prices
n. Fuel delivery charges

26. Thermal Power Purchase Agreement (PPA) Operating Characteristics and Costs

PPAs are modeled based upon their tested operating characteristics and contracted costs. Below is a list of typical operating and cost inputs for each thermal PPA.

a. Contract term
b. Maximum Capacity
c. Minimum Capacity Rating
d. Seasonal Deration
e. Heat Rate Profiles
f. Energy Schedule
g. Capacity Payments
h. Energy Payments
i. Maintenance Schedule
j. Forced Outage Rate
k. Emission rates for SO_2, NO_x, CO_2, Mercury and PM
l. Contribution to spinning reserve
m. Fuel prices
n. Fuel delivery charges

27. Renewable Energy PPAs and Owned Operating Characteristics and Costs

PPAs are modeled based upon their tested operating characteristics and contracted costs. Company owned units were modeled based upon their tested operating characteristics and historical or projected costs. Below is a list of typical operating and cost inputs for each renewable energy PPA and owned unit.

a. Contract term
b. Name Plate Capacity
c. Accredited Capacity
d. Annual Energy
e. Hourly Patterns
f. Capacity and Energy Payments
g. Integration Costs

Wind hourly patterns were developed through a "Typical Wind Year" process where individual months were selected from the years 2014-2017 to develop a typical year. Actual generation data from the selected months were used to develop the profiles for each wind farm. For farms where generation data was not complete or not available, data from nearby similar farms were used.

Solar hourly patterns were taken from the ELCC Study from Fall 2013 and updated to reflect the ELCC as stated above. The fixed panel pattern is an average of the four orientations and three years (2008-2010) of data and single-axis tracking pattern is an average of three years of data.

28. Generic Assumptions

Generic resources were modeled based upon their expected operating characteristics and projected costs. Below is a list of typical operating and cost inputs for each generic resource.

<u>Thermal</u>

a. Retirement Date
b. Maximum Capacity
c. UCAP Ratings
d. Minimum Capacity Rating
e. Seasonal Deration
f. Heat Rate Profiles

g. Variable O&M
h. Fixed O&M
i. Maintenance Schedule
j. Forced Outage Rate
k. Emission rates for SO_2, NO_x, CO_2, Mercury and PM
l. Contribution to spinning reserve
m. Fuel prices
n. Fuel delivery charges

Renewable

a. Contract term
b. Name Plate Capacity
c. Accredited Capacity
d. Annual Energy
e. Hourly Patterns
f. Capacity and Energy Payments
g. Integration Costs

Tables 13-14 below show the assumptions for the generic thermal and renewable resources.

Table 13: Thermal Generic Information (Costs in 2018 Dollars)

Resource	Sherco CC	Generic CC	Generic CT	Generic CT	Generic CT
Technology	7H	7H	7H	7F	7H
Location Type	Brownfield	Greenfield	Brownfield	Brownfield	Greenfield
Cooling Type	Wet	Dry	Dry	Dry	Dry
Book life	40	40	40	40	40
Nameplate Capacity (MW)	916	916	374	232	374
Summer Peak Capacity with Ducts (MW)	870	870	NA	NA	NA
Summer Peak Capacity without Ducts (MW)	643	643	331	228	331
Capital Cost ($/kW)	$914	$951	$446	$495	$445
Electric Transmission Delivery ($/kW)	NA	$301	NA	NA	$100
Ongoing Capital Expenditures ($/kW-yr)	$6.77	$6.77	$4.77	$3.85	$3.85
Gas Demand ($/kW-yr) 2018$	$32.56	$21.14	NA	NA	$2.07
Fixed O&M Cost ($000/yr) 2018$	$2,605	$3,105	$422	$736	$668
Variable O&M Cost ($/MWh)	$1.42	$1.42	$4.90	$4.90	$4.90
Levelized $/kw-mo (All Fixed Costs) $2018	$12.04	$12.71	$4.62	$5.13	$5.58
Heat Rate with Duct Firing (btu/kWh)	6,494	6,818	NA	NA	NA
Heat Rate 100% Loading (btu/kWh)	6,331	6,647	9,042	9,791	9,042
Heat Rate 75% Loading (btu/kWh)	6,464	6,787	9,474	10,234	9,474
Heat Rate 50% Loading (btu/kWh)	6,876	7,220	10,833	12,006	10,833
Heat Rate 25% Loading (btu/kWh)	7,831	8,222	11,279	12,835	11,279
Forced Outage Rate	3%	3%	3%	3%	3%
Maintenance (weeks/yr)	5	5	2	2	2

Table 14: Renewable Generic ECC Costs - $/MWh

GENERIC WIND		
Year	PTC	ECC ($/MWH)
2023	60%	33.06
2024	40%	37.72
2025	0%	46.48
2026	0%	46.76
2027	0%	47.07
2028	0%	47.39
2029	0%	47.74
2030	0%	48.11
2031	0%	48.55
2032	0%	49.00
2033	0%	49.49
2034	0%	50.00
2035	0%	50.53
2036	0%	51.09
2037	0%	51.68
2038	0%	52.30
2039	0%	52.95
2040	0%	53.63
2041	0%	54.34
2042	0%	55.08
2043	0%	55.86
2044	0%	56.67
2045	0%	57.53
2046	0%	58.41
2047	0%	59.34
2048	0%	60.32
2049	0%	61.33
2050	0%	62.39
2051	0%	63.64
2052	0%	64.91
2053	0%	66.21
2054	0%	67.53
2055	0%	68.88
2056	0%	70.26
2057	0%	71.66

GENERIC SOLAR		
Year	ITC	ECC ($/MWH)
2023	30%	43.45
2024	30%	43.75
2025	10%	44.05
2026	10%	44.34
2027	10%	44.64
2028	10%	44.93
2029	10%	45.22
2030	10%	45.50
2031	10%	46.04
2032	10%	46.58
2033	10%	47.12
2034	10%	47.66
2035	10%	48.21
2036	10%	48.77
2037	10%	49.32
2038	10%	49.88
2039	10%	50.44
2040	10%	51.01
2041	10%	51.52
2042	10%	52.02
2043	10%	52.53
2044	10%	53.04
2045	10%	53.55
2046	10%	54.06
2047	10%	54.57
2048	10%	55.08
2049	10%	55.58
2050	10%	56.09
2051	10%	57.21
2052	10%	58.36
2053	10%	59.52
2054	10%	60.71
2055	10%	61.93
2056	10%	63.17
2057	10%	64.43

II. Strategist Modeling Outputs

1. Annual Net Costs and Savings

The PVSC Base and PVRR Base annual costs and savings for the proposed repowering of Jeffers & CWN PPA are shown below in Figure 5.

The PVSC and PVRR for the proposed ownership of Jeffers & CWN PPA are shown below in Figure 6.

Figure 5: Annual PVSC and PVRR Net Costs (Savings) in $millions

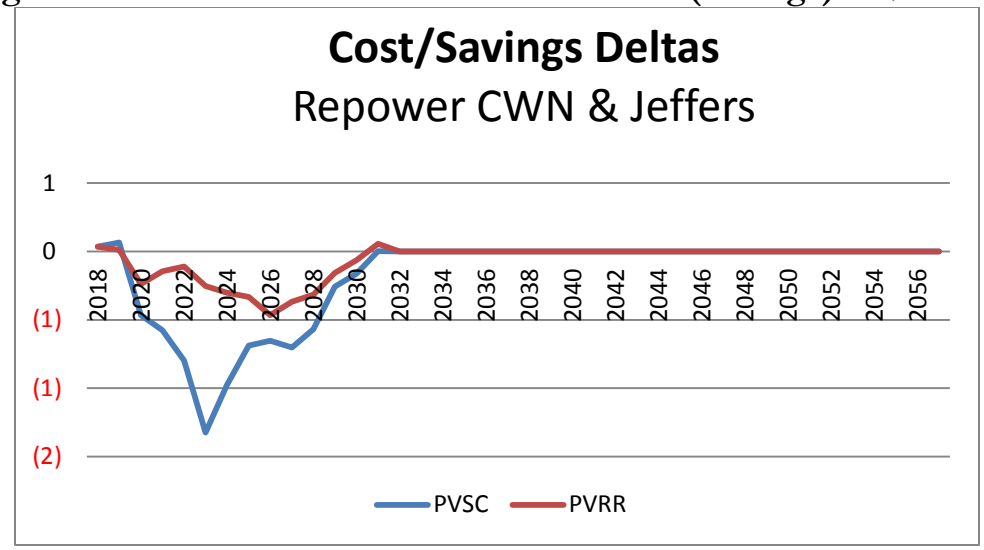
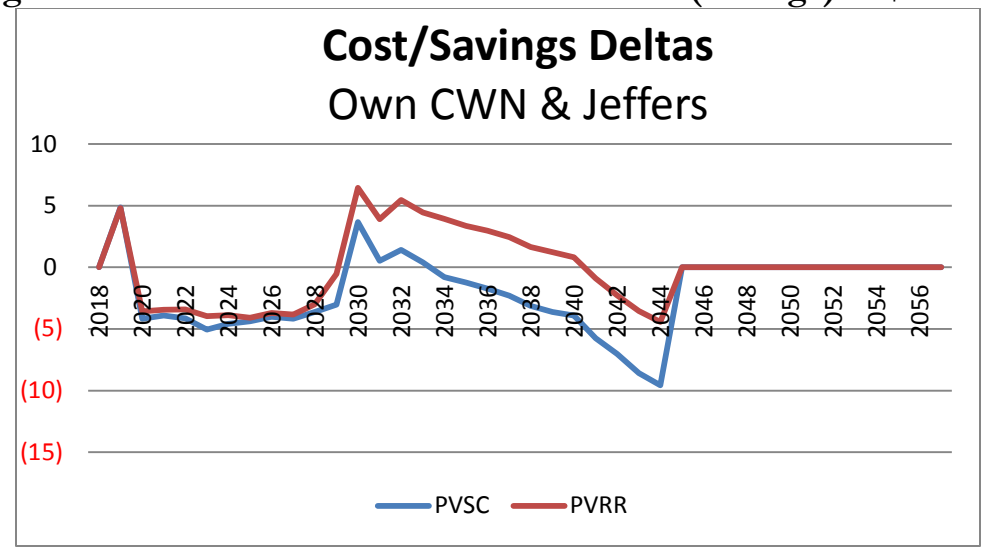


Figure 6: Annual PVSC and PVRR Net Costs (Savings) in $millions



CERTIFICATE OF SERVICE

I, Carl Cronin, hereby certify that I have this day served copies of the foregoing document on the attached list of persons.

xx by depositing a true and correct copy thereof, properly enveloped with postage paid in the United States mail at Minneapolis, Minnesota

or

xx electronic filing

Docket No. E002/M-10-734

Docket No. E002/M-06-1234

Xcel Energy Miscellaneous Electric Service List

Dated this 21st day of December 2018

/s/

_____

Carl Cronin
Regulatory Administrator

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