minnesota power
AN ALLETE COMPANY

Fax 218-733-3983 / E-mail lhoyum@mnpower.com

September 27, 2013

VIA E-FILING
Dr. Burl W. Haar
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

Re: In the Matter of the Petition of Minnesota Power for Approval of Investments and Expenditures in the Bison 4 Wind Project for Recovery through Minnesota Power's Renewable Resources Rider under Minn. Stat. § 216B.1645
Docket No. E015/M-13____

Dear Dr. Haar:

Minnesota Power is pleased to present this Petition to the Minnesota Public Utilities Commission ("Commission") for approval to construct a cost effective, high quality wind energy resource for its customers, as part of its Renewable Energy Plan, pursuant to Minn. Stat. § 216B.1645. Minnesota Power is seeking Commission approval of this Petition for the investments and expenditures related to the development of the Bison 4 Wind Project.

Several key developments have occurred since Minnesota Power added its most recent major wind resource. Most importantly, in January 2013 Congress extended the production tax credit ("PTC") with a requirement that construction begin prior to January 1, 2014. As a result of the PTC extension, the Company initiated the process of securing up to 200 MW of competitive wind to be installed in the next two to three years. Most recently, Minnesota Power's 2013 Integrated Resource Plan ("2013 Plan") was approved by the Commission in a motion on September 25, 2013. The 2013 Plan identified the Company's intent to secure additional wind resources as part of its short-term action plan. Based on Commission approval of the 2013 Plan, and subject to maximizing the benefit of the PTC for customers, Minnesota Power believes the Bison 4 Project is a cost effective approach to adding renewable energy to its system.

The Bison4 Wind Project is a 204.8 MW project located in Oliver County, North Dakota, north and west of Minnesota Power's commercially operational Bison Wind Energy Center. This Project takes advantage of the current opportunity to utilize available tax incentives coupled with advantageous turbine pricing to build a wind project beneficial to Minnesota Power customers. The location of the Project, adjacent to Bison 1, 2 and 3, is ideal logistically and combines the strong wind resource in North Dakota with economies of scale for service and maintenance, as well as the ability to leverage existing transmission lines, including Minnesota Power's Direct Current transmission line that runs from Center, North Dakota to the Minnesota Power service territory, for reliable delivery of the wind energy.

The Bison 4 Wind Project will be comprised of sixty-four 3.2 MW Siemens direct-drive turbines. With an installed nameplate capacity of 204.8 MW, Minnesota Power projects the

Bison4 Wind Project will have an annual energy output of approximately 835,000MWh. The Bison 4 Wind Project further strengthens Minnesota Power's diverse renewable energy portfolio, which remains comprised of wind, biomass and hydro. This Project is another important step in the Company's execution of its Renewable Plan, as well as its Energy***Forward*** resource strategy, which has as its key goal creating a more flexible, efficient and diverse power supply with less emissions. Completing the Bison 4 Wind Project will put Minnesota Power firmly on the path to obtain 25 percent of its electricity for its retail customers from renewable energy sources by the year 2025.

Certain portions of the Petition contain trade secret information and are marked as such, pursuant to the Commission's Revised Procedures for Handling Trade Secret and Privileged Data, which procedures further the intent of Minn. Stat. § 13.37 and Minn. Rule 7829.0500. As required by the Commission's Revised Procedures, a statement providing justification for excising the Trade Secret Data is included in the Petition. In addition, Exhibit A is Trade Secret in its entirety because it contains confidential RFP responses. The information in Exhibit A has been limited to select individuals within Minnesota Power per the terms of the bid process. As a result, Exhibit A is being e-filed separately to maintain the limited distribution requirement both internal to Minnesota Power and externally to the public agencies.

In accordance with Minn. Rule 7829.1300, Minnesota Power has included a Summary with this filing. As reflected in the attached Affidavit of Service, the Summary has been filed on the official general service list utilized by Minnesota Power as well as the 2008 Integrated Resource Plan service list.

Please contact me at (218) 355-3601 with any questions related to this matter.

Yours truly,

Lori Hoyum
Policy Manager

LMH
Enc.

STATEMENT REGARDING JUSTIFICATION FOR EXCISING TRADE SECRET INFORMATION

Pursuant to the Commission's revised Procedures for Handling Trade Secret and Privileged Date in furtherance of the intent of Minn. Stat. § 13.37 and Minn. Rule 7829.0500, Minnesota Power has designated portions of its attached Petition as Trade Secret.

Minnesota Power is requesting approval for costs associated with its investments related to the Bison 4 Wind Project in North Dakota through Minnesota Power's Renewable Resources Rider under Minn. Stat. § 216B.1645. Minnesota Power has made certain information in the Petition non-public to prevent disclosure of Minnesota Power's information regarding its methods, techniques and process for identifying, obtaining, managing, and comparing wind resources from existing and potential generating facilities, including other renewable resources. This is highly confidential information; Minnesota Power's competitors, as well as its potential suppliers, would gain a commercial advantage over Minnesota Power if this information were publicly available. Minnesota Power follows strict internal procedures to maintain the secrecy of this information in order to capitalize on economic value of the information to Minnesota Power on behalf of its customers. If this information became publicly available, Minnesota Power and its customers would suffer from the corruption of Minnesota Power's negotiating position as it obtains renewable resources for its retail load. Minnesota Power respectfully requests the opportunity to provide additional justification in the event of a challenge to the trade secret designation provided herein.

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SUMMARY OF FILING

Minnesota Power submits this Petition to the Minnesota Public Utilities Commission ("Commission") pursuant to Minn. Stat. § 216B.1645 and Minn. Rule 7829.1300. Minnesota Power is seeking Commission approval of this Petition for the investments and expenditures related to the development of the Bison 4 Wind Project and associated transmission requirements through the Rider for Renewable Resources. The Bison 4 Wind Project is a 204.8 MW project located in Oliver County, North Dakota that will make a significant and very cost-effective addition toward meeting Minnesota Power's requirements under Minnesota's Renewable Energy Standard.

PUBLIC DOCUMENT
TRADE SECRET DATA EXCISED

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of the Petition of Minnesota Power for Approval of Investments and Expenditures in the Bison 4 Wind Project for Recovery through Minnesota Power's Renewable Resources Rider under Minn. Stat. § 216B.1645	Docket No. E015/M-13____ **PETITION FOR APPROVAL**

I. INTRODUCTION

Minnesota Power respectfully submits to the Minnesota Public Utilities Commission ("Commission") this Petition for approval of investments and expenditures related to the Bison 4 Wind Project ("Bison 4 Project" or "Bison 4") through Minnesota Power's Commission-approved Rider for Renewable Resources ("Renewable Resources Rider"). The Petition is being submitted pursuant to Minn. Stat. § 216B.1645, subd. 1 and Minn. Rule 7829.1300. Minnesota Power would construct and own this 204.8 MW wind facility to be located in Oliver County, North Dakota, north and west of the Minnesota Power's commercially operational Bison Wind Energy Center. The wind energy generated from the Bison 4 Project will contribute significantly towards Minnesota Power's requirements under the Renewable Energy Standard ("RES"). Minn. Stat. § 216B.1691. Additionally, Minnesota Power's long-term outlook for energy and capacity needs supports Minnesota Power's decision to move forward with the Bison 4 Project. The expansion of the Bison Wind Energy Center to accommodate a fourth phase will include a new substation and an approximately 11- mile extension of the existing 230 kV transmission line.

In the Commission's September 13, 2012 Order on Minnesota Power's baseload diversification study compliance filing (Docket No. E015/M-09-1088), Minnesota Power was directed to include in its next resource plan "scenarios that add 100 to 200 MW of wind capacity in the 2014-2016 time frame." On January 2, 2013, the production tax credit ("PTC") [1] was

[1] The federal renewable electricity production tax credit is a per-kilowatt-hour tax credit for electricity generated by qualified energy resources and sold by the taxpayer during the taxable year.

extended as part of the American Taxpayer Relief Act of 2012 legislation. The PTC is currently available to wind energy production facilities that begin construction prior to January 1, 2014.

Minnesota Power's renewable resource development is guided by the Company's 2013 Integrated Resource Plan ("2013 Plan),[2] and Energy***Forward*** resource strategy,[3] which incorporate a diverse renewable strategy including hydroelectric, biomass, and wind resources. As identified in the 2013 Plan, which was approved by the Commission in a motion on September 25, 2013, with the January extension of the federal PTC the Company planned to initiate the process of securing up to 200 MW of competitive wind to be installed in the next two to three years.[4] Based on Commission guidance to explore wind resources, and subject to maximizing the benefit of the PTC for customers, Minnesota Power believes the Bison 4 Project is a cost effective approach to adding renewable energy to its system while also meeting the RES, and helping to ensure the reliable and affordable power Minnesota Power's customers expect. Additionally, Minnesota Power believes Bison 4 will help address the significant growth and resultant increased energy needs being projected for its large industrial customer segment in the current planning horizon.

Minnesota Power initiated a request for proposal ("RFP") process in March 2013 for slightly more than the 200 MW identified in the 2013 Plan, requests for proposals for up to 225 MW of competitive wind to be installed in the next two to three years. The Company independently submitted its own proposal for the Bison 4 Project into the RFP for analysis with all other proposals. Results of the process demonstrated that Minnesota Power's Bison 4 Project

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[2] Minnesota Power submitted its 2013 Plan on March 1, 2013 (Docket No. E015/RP-13-53). The Bison 4 Wind Project was included in Appendix G of Minnesota Power's 2013 Plan. Bison 4 Wind was characterized as a minimum of 100 MW and up to 200 MW project (phase 4a and 4b) with a projected in-service date to be determined. On August 9, 2013, Minnesota submitted a Notice of Changed Circumstances Affecting Resource Planning to the Commission and parties to Minnesota Power's 2013 Plan pursuant to Minnesota Rules 7843.0500, subp. 5. On August 1, 2013, Minnesota Power announced in a press release that it was moving ahead with the 200 MW Bison 4 Wind Project and that the Company planned to file in early fall a petition requesting Commission approval of this investment under Minn. Stat. § 216B.1645.

[3] Minnesota Power announced its Energy***Forward*** resource strategy in late January 2013. Energy***Forward*** builds upon renewable energy investments already completed. It further diversifies Minnesota Power's generation mix, balancing coal, renewables and natural gas and builds upon significant emission reductions at its existing power plants, all the while preserving the reliable and affordable power Minnesota Power's customers expect. See http://www.mnpower.com/Environment/EnergyForward for additional information.

[4] See Section V. Short-term Action Plan, pages 76-77.

is the lowest cost option to bring additional wind energy into its power supply. As with the Bison 3 Wind Project (Docket No. E015/M-11-626), the addition of the Bison 4 Wind Project allows Minnesota Power not only to leverage its existing relationships and experiences from its current North Dakota wind expansion efforts, but also to reduce the Company's potential future reliance on wholesale energy market purchases and reduce total carbon dioxide ("CO_2") emissions.

Minnesota Power believes it has a unique and timely opportunity to implement the fourth phase of its North Dakota wind initiative with the Bison 4 Project. The Project will provide substantial benefit to Minnesota Power's customers over its 35-year life as both a renewable resource and an economical power source. By accelerating the build-out of the Project now, Minnesota Power is in a position to leverage multiple opportunities and Company strengths. First, the extension of the federal PTC, combined with the requirement to begin construction before January 1, 2014,[5] created uncertainty in the U.S. wind energy market, resulting in many wind turbine manufacturers having excess manufacturing capability. This resulted in advantageous turbine pricing. Secondly, Minnesota Power will qualify for the federal production tax benefits by beginning construction prior to their expiration. Third, Minnesota Power has sufficient siting options resulting from positive landowner relations, and access to much of the infrastructure necessary to implement the additional 204.8 MW of wind. Additionally, the location of the Project, adjacent to Bison 1, 2 and 3, is ideal logistically and combines the strong wind resource in North Dakota with economies of scale for service and maintenance, as well as the ability to leverage existing transmission lines for reliable delivery of the wind energy.

In an effort to meet the State's RES and continue to diversify its energy resource portfolio, Minnesota Power has taken significant steps over the last five years to develop and begin implementation of a renewable plan that incorporates substantial cost effective wind energy into its supply mix. Commencing with 98.6 MW of purchased wind energy from the Oliver I and II Wind Energy Centers in North Dakota, Minnesota Power continued implementation of its renewable plan in 2007 with the first Minnesota Power built and owned commercial wind energy facility. The 25 MW Taconite Ridge Wind Energy Center, located in

[5] Extension of the federal PTC for facilities that begin construction beyond this date is uncertain.

Northeastern Minnesota, began commercial operation in June 2008. In March 2009, Minnesota Power submitted its Petition for approval of investments and expenditures related to the Bison 1 Wind Project ("Bison 1 Project" or "Bison 1")[6] and associated transmission upgrades through Minnesota Power's Commission-approved Renewable Resources Rider. The 81.8 MW Bison 1 Project was the first Minnesota Power built and owned commercial wind energy facility in North Dakota. On July 7, 2009, the Commission issued an order approving Minnesota Power's investments and expenditures related to the Bison 1 Project. The Bison 1 Project was developed on time and on budget and began commercial operation in January 2012.

Minnesota Power submitted petitions for approval of investments and expenditures through Minnesota Power's Commission-approved Renewable Resources Rider for its second and third phases in the Company's North Dakota wind initiative on March 24, 2011, and June 21, 2011, respectively. Investments and expenditures related to the Minnesota Power built and owned 105 MW Bison 2 Wind Project ("Bison 2 Project" or "Bison 2"),[7] and 105 MW Bison 3 Wind Project ("Bison 3 Project" or "Bison 3"),[8] were approved by the Commission in Orders issued on September 8, 2011, and November 2, 2011, respectively. The Bison 2 and Bison 3 Wind Projects were developed on time and on budget, and concurrently began commercial operation in December 2012.

Minnesota Power's North Dakota wind initiative commenced with the 2009 acquisition of the High Voltage Direct Current transmission line ("DC Line"), which runs between the Square Butte Substation in Center, North Dakota and Minnesota Power's Arrowhead Substation near Duluth. (Docket No. E015/PA-09-526). The energy from the Bison 4 Project will be delivered to customers with a combination of the DC Line and the North Dakota and Minnesota alternating current ("AC") transmission systems. As described in Section IV, Minnesota Power has entered into a facilities construction agreement with Minnkota Power to increase the Center-Heskett 230 kV transmission line capacity from 438 MVA to 591 MVA. This additional transmission improvement to the line will facilitate the deliverability and reliability of the Bison 4 Project. Minnesota Power currently has sufficient site control established to fully execute this

[6] Docket No. E015/M-09-285.

[7] Docket No. E015/M-11-234.

[8] Docket No. E015/M-11-626.

phase of its North Dakota wind initiative. The wind power generated by the Bison 4 Project will bring Minnesota Power closer to meeting the State RES mandate.

Minnesota Power is uniquely positioned with its access to the superior wind resource in North Dakota and ability to reliably deliver Bison 4 energy to its service area in Minnesota. The realization of the Bison 4 Project places the Company on a firm track to cost-effectively and fully meet the State RES by 2025. Poised with existing transmission access and competitive technology costs, the Bison 4 Project, while accelerated, is a well-timed next step in Minnesota Power's resource strategy that will provide for its customers: a cost effective renewable power supply that will help in meeting projected load growth for its large industrial customer segment; progress towards compliance in meeting the RES; reduction in dependency on wholesale energy market purchases; and a reduction in emissions, including carbon dioxide.

II. PROCEDURAL MATTERS

A. General Filing Information

Pursuant to Minn. Stat. § 216B.16, subd. 1 and Minn. Rule 7829.1300, Minnesota Power provides the following required general filing information.

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

A one-paragraph summary accompanies this Petition.

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

Pursuant to Minn. Stat. § 216.17, subd. 3 and Minn. Rule7829.1300, subp. 2, Minnesota Power eFiles the Petition on the Department of Commerce - Division of Energy Resources ("the Department") and the Minnesota Office of the Attorney General - Antitrust and Utilities Division. A summary of the filing prepared in accordance with Minn. Rule 7829.1300, subp. 1 is being served on Minnesota Power's general service list.

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

Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 722–2641

4. Name, Address and Telephone Number of Utility Attorney (Minn. Rule 7829.1300, subp. 4(B))

David R. Moeller
Senior Attorney
Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 723–3963
dmoeller@allete.com

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

This Petition is being filed on September 27, 2013. The effective date is the date of the Commission's Order or such other date as directed in the Commission's Order.

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

This Petition is made pursuant to Minn. Stat. § 216B.1645, subd. 1. Minn. Rule 7825.3200 requires that utilities serve notice to the Commission at least 90 days prior to the proposed effective date of modified rates. Furthermore, Minnesota Power's Petition falls within the definition of a "Miscellaneous Tariff Filing" under Minn. Rules 7829.0100, subp. 11 and 7829.1400, subp. 1 and 4 permitting comments in response to a miscellaneous filing to be filed within 30 days, and reply comments to be filed no later than 10 days thereafter.

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

Lori Hoyum
Policy Manager
Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 355-3601
lhoyum@mnpower.com

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

This filing will have no effect on Minnesota Power's base rates. However, since this is a request for current cost recovery eligibility that, if approved by the Commission, Minnesota Power will seek to include, in the future, the costs in its Renewable Resources Rider. Minnesota Power provides anticipated rate implications in Section V.

9. Service List (Minn. Rule 7829.0700)

David R. Moeller
Senior Attorney
Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 723-3963
dmoeller@allete.com

Lori Hoyum
Policy Manager
Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 355-3601
lhoyum@mnpower.com

B. Trade Secret Designation (Minn. Rule 7825.0500)

Pursuant to Minn. Stat. §§ 13.01 et seq. and Minn. Rule 7829.0500, Minnesota Power has designated portions of the Petition as containing Trade Secret Information and these have been redacted as appropriate to reflect the Trade Secret nature of the documents. Trade Secret and

Public copies of the Petition are being eFiled in accordance with the Commission's Rules and Minn. Stat. § 216.17, subd. 3. A statement regarding justification for excising Trade Secret information accompanies this Petition.

III. THE BISON 4 WIND PROJECT

A. Project Overview

The Bison 4 Project is a 204.8 MW wind energy facility that will be located in Oliver County in west central North Dakota. The Project will use sixty-four Siemens turbines and cost approximately $345 million to build. The Bison 4 Project will interconnect to the electric grid at the Square Butte Substation, which allows the wind energy to flow via Minnesota Power's existing DC Line and provides a very cost competitive energy and capacity resource for Minnesota Power's customers. The Bison 4 Project is scheduled to begin construction before year end 2013 in order to qualify for the federal PTC, and is scheduled to be placed in-service by year end 2014. The Bison 4 Project will be the fourth Minnesota Power-built and owned commercial wind energy facility in North Dakota, further securing Minnesota Power's ability to timely, reliably and affordably meet the State RES.

1. Location and Wind Data

The proposed location of the Bison 4 Project is adjacent to the Bison 1, 2 and 3 Projects in west central North Dakota, approximately 12 miles northwest of the city of New Salem, in Oliver County. The site was selected based on good land compatibility, positive landowner relations, excellent wind quality data, and close proximity to the interconnection point at the Bison Substation.[9] North Dakota is well suited for wind development because it features vast land area available for wind turbine siting with large open terrain and an absence of trees. Within 20 miles of the Bison Substation, there are hundreds of square miles that are suitable for wind development, and Minnesota Power has secured a sufficient amount of wind easement options with cooperative landowners to support its planned wind projects. Figure 1 illustrates the Bison 4 Project area in Oliver County and its proximity to the Bison 1, 2 and 3 Projects and the DC Line terminal.

[9] The existing Bison substation was constructed as part of the Bison 1 Wind Project (Docket No. E-015/M-09-285).

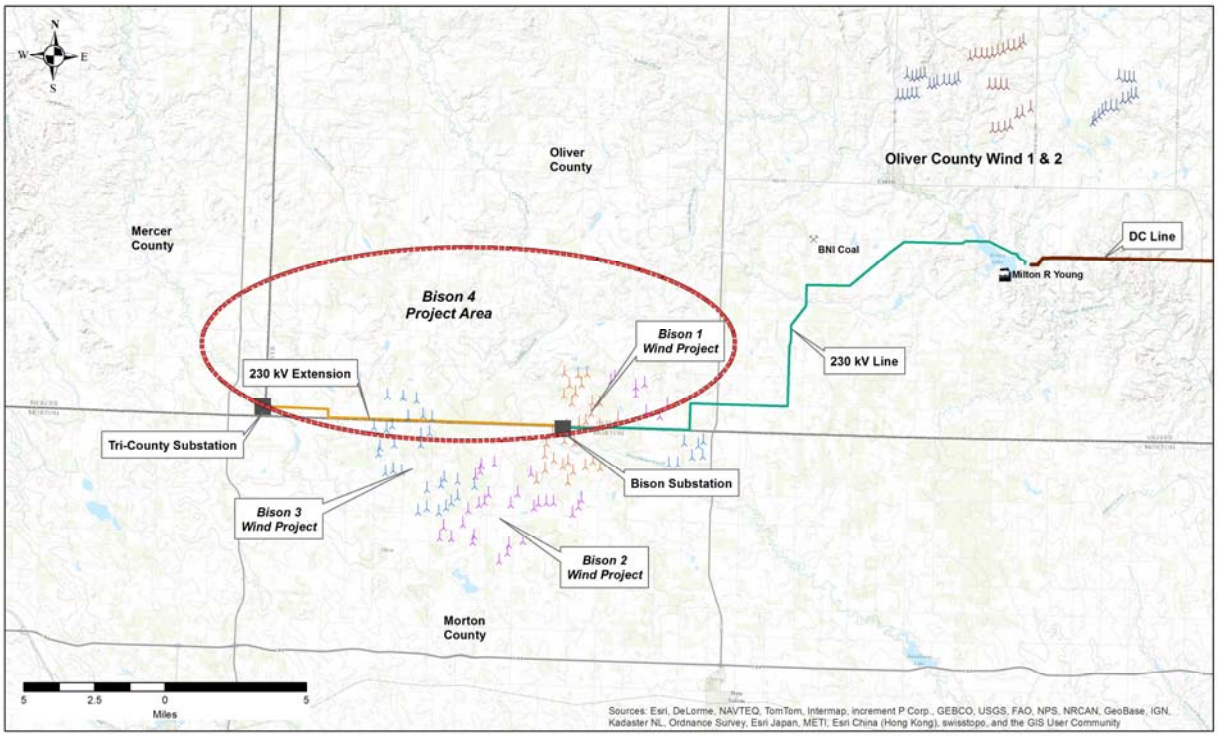

Figure 1--Bison 4 Project Location Map

The location of the Bison 4 Project site combines the strong wind resource with the proximity to the DC Line to provide cost effective renewable energy generation to meet customer power needs. The west central region of North Dakota has higher average wind speeds than most other buildable areas in the Midwest, as shown by the map in Figure 2. In 2008, Minnesota Power embarked upon a wind assessment process to evaluate the wind energy potential in areas in which Minnesota Power has obtained site control near the western terminus of Minnesota Power's DC Line. To date, this wind assessment has produced over four years of wind data at the Bison 4 Project site and indicates annual average wind speeds of over 8.5 meters per second (19 miles per hour) in the area, making it an ideal site to build a wind project that can deliver cost effective energy to customers.

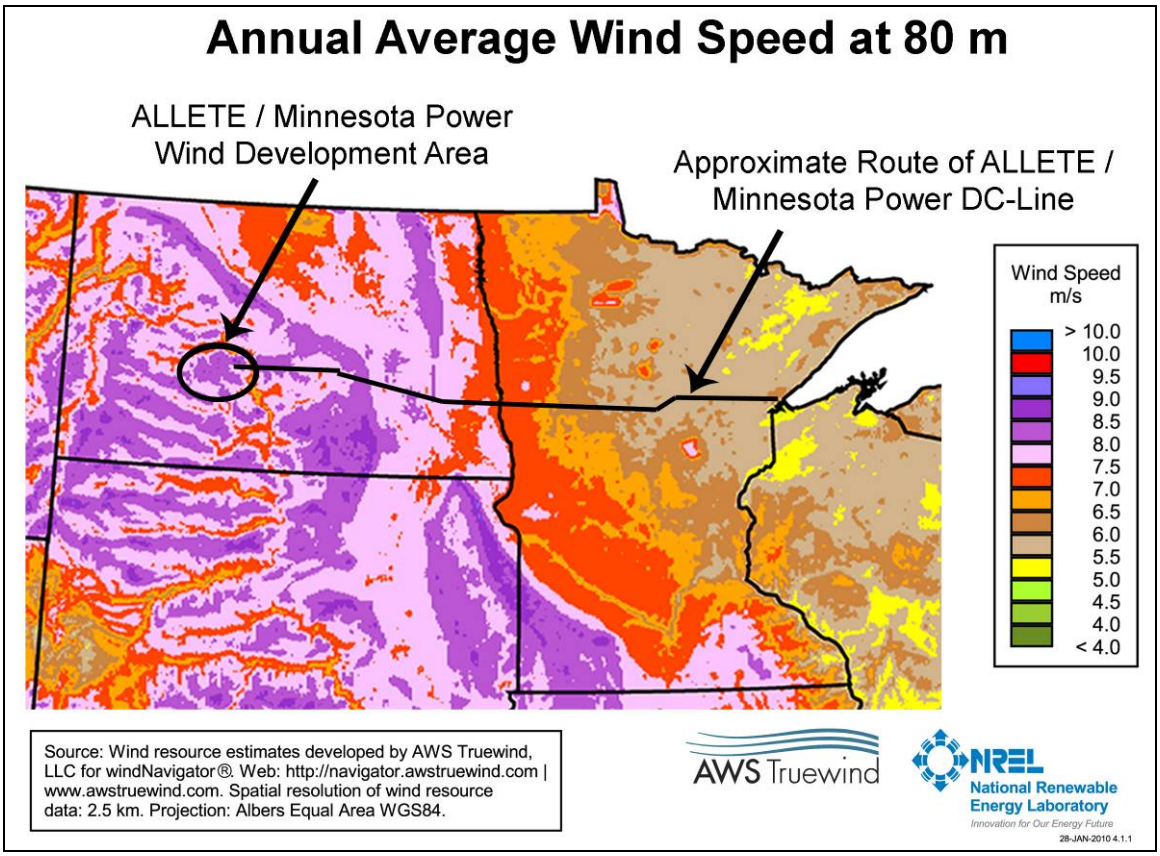

Figure 2--Upper Midwest Wind Resource Map

2. Wind Turbine Supply

In August 2013, Minnesota Power entered into a turbine supply agreement with Siemens for the supply and erection of sixty-four SWT-3.2-113 turbines for a total installed nameplate capacity of 204.8 MW. Utilizing these turbines will increase Minnesota Power's North Dakota wind generation by an estimated annual average of approximately 835,000 MWh.[10] The Siemens turbines have a hub height of 92.5 meters (303 ft.), a rotor diameter of 113 meters (371 ft.), and a 3.2 MW direct drive generator. The turbines are variants[11] of the 3.0 MW SWT-3.0-101 turbines deployed for Phase 2 of Minnesota Power's Bison 1 Project, and the Bison 2 and Bison 3 Projects. As a result, the Bison 4 Project will experience both capital and operational synergies with Bison 1, 2 and 3. The Bison 4 Project will benefit from capital cost

[10] Generation increase for Bison 4 is reported net of energy loss impacts due to the proximity of the Bison 4 Project to the Bison 1, 2 and 3 Projects.

[11] The SWT-3.2-113 turbine is substantially of the same design as the SWT-3.0-101 turbine, but with a greater nameplate capacity (3.2 MW vs. 3.0 MW), a larger rotor diameter (113 meters vs. 101 meters), and a higher hub height (92.5 meters vs. 80 meters).

savings through the continued use of the existing operations and maintenance facility, substation and 230 kV transmission line erected for the Bison 1 Project, which help offset increased project capital costs associated with the 11-mile extension of the 230 kV transmission line and new Tri-County Substation. Operational efficiencies are also anticipated over the life of the project for common training and maintenance service practices.

The turbines will include a high percentage of U.S. manufactured components. Siemens anticipates sourcing of blades from its blade factory in Fort Madison, Iowa as well as rotors and nacelle back-ends from its nacelle factory in Hutchinson, Kansas. Siemens plans to source towers from Broadwind Towers, Inc. in Manitowoc, Wisconsin. Over 330 tons of steel are utilized in each erected wind turbine, which amounts to more than 21,000 tons for the entire Bison 4 Project. This steel usage will benefit the Minnesota economy through either direct supply of raw iron units or indirect market demand. Turbine delivery to the site is scheduled for the Second and Third Quarters of 2014 with erection and commissioning in the Third and Fourth Quarters of 2014.

3. Interconnection and Transmission

Minnesota Power has two interconnection agreements with the Midcontinent Independent System Operator ("MISO"), each for a nominal 100 MW wind installation, enabling Minnesota Power to install and commission the Bison 4 Project in 2014. The point of interconnection is the existing Square Butte Substation near Center, North Dakota. The Bison 4 Project will be a 'Capacity and Energy' resource for customers.[12]

The Bison 4 Project will leverage existing transmission assets installed for the Bison 1 Project (Docket No. E-015/M-09-285) to transmit the power from the Bison 4 Project to the point of interconnection. These existing assets include the Bison Substation and the 22-mile 230 kV AC transmission line that connects the Bison Substation to the Square Butte Substation near Center, North Dakota. Due to the size of the Bison 4 project, a new Tri-County Substation

[12] Capacity is the physical amount of generation a company has available to serve load in megawatts (MW); it represents an asset's potential to generate electricity. Capacity is related to peak demand. In other words, Minnesota Power must maintain a level of available capacity sufficient to meet the peak demand of its customers during the hottest summer days and the coldest winter nights and have some in reserve. Energy is the amount of electricity (produced from capacity) customers consume over time. Energy is measured in megawatt-hours (MWh).

and an additional 11 miles of transmission line will be constructed to the west of the existing Bison Substation. The Bison 4 Project requires a 34.5 kV electrical collector system to provide the connection between each of its sixty-four turbines and the existing Bison Substation or new Tri-County Substation. Thirty-two turbines will connect to the Bison Substation and thirty-two turbines will connect to the Tri-County Substation. Each substation will include a 34.5 kV/230 kV transformer to enable connecting the power output to the high voltage electrical transmission network. From the substation, the power would flow over the 230 kV AC transmission line to the existing Square Butte Substation.

Minnesota Power acquired the DC Line to allow it to add significant wind energy supplies in North Dakota and deliver the energy to its service territory in Minnesota. Since its inception, the DC Line has had a capacity to deliver 500 MW of energy. Minnesota Power is in the process of upgrading the DC Line for continuous operation at 550 MW.[13] This project is proceeding on schedule with completion anticipated by year end 2013. Minnesota Power currently shares the firm transmission service of the DC Line with Minnkota Power. Minnkota Power has an existing transmission service agreement to deliver 227.5 MW of power from the Milton R. Young Unit 2 Lignite Coal electric generating station ("Young 2"). Minnesota Power has existing transmission service agreements for the remaining DC Line capacity, which it uses for delivering energy from Young 2 and its North Dakota wind projects. As part of Minnesota Power's acquisition of its DC Line, Minnkota Power will discontinue using the DC Line in early 2014 and transfer its share of Young 2 power to its newly constructed 345 kV AC transmission line. The new Minnkota Power transmission line will span 260 miles from Center, North Dakota to Grand Forks, North Dakota. Minnkota Power has obtained the required permits from the North Dakota Public Service Commission ("NDPSC") and will be completing construction in early 2014.[14] Once the transition occurs in early 2014, Minnesota Power will have full access to the 550 MW of firm transmission capability of the DC Line to support the long-term delivery of the Bison 4 Project and Minnesota Power's existing North Dakota wind projects.

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[13] The Commission approved Minnesota Power's request to upgrade the DC Line in its July 7, 2009 Order (Docket No. E-015/M-09-285).

[14] NDPSC Case No. PU-09-670. Minnkota Power has named this transmission project the Center to Grand Forks Project ("Project") and has developed a website (http://www.minnkotacgf.com) that provides up-to-date information on the Project. Minnesota Power provides updates on the progress of construction of Minnkota Power's transmission line every six months as required by the Commission's Order in Docket No. E015/PA-09-526.

With the addition of the Bison 4 Project in 2015, Minnesota Power's North Dakota wind projects will have a total nameplate capacity of about 595 MW. Additionally, Minnesota Power has an agreement for 100 MW of energy from Young 2 and an agreement to purchase 50 MW from Minnkota Power. When all of the wind projects are operating at or near full capacity, this will exceed the capacity of the 550 MW DC Line, and the excess energy will be delivered using the AC transmission system.

Because wind is a variable resource, a wind turbine does not operate at full nameplate capacity much of the time. Exceeding the DC Line capacity is expected to happen about **[TRADE SECRET DATA EXCISED]** of the time in the first 5 years of the project. As a result, approximately **[TRADE SECRET DATA EXCISED]** of the energy from Bison 4 can be transmitted using the DC Line with the remaining **[TRADE SECRET DATA EXCISED]** transmitted on the AC system. See Figure 3 on page 15. By 2026, when Minnesota Power's agreement for energy from Young 2 ends (see Figure 5 on page 16), about **[TRADE SECRET DATA EXCISED]** of energy from Bison 4 can be transmitted using the DC Line. See Figure 4 on page 15. Over the life of the project, less than **[TRADE SECRET DATA EXCISED]** of the energy from Bison 4 must rely on the AC transmission system for delivery.[15] That portion of energy output which cannot be delivered using Minnesota Power's DC Line will be subject to existing AC transmission availability. Availability of the AC transmission system is not expected to create significant limitations on the Bison 4 wind farm.

[15] These estimates are conservative as they assume Young 2 is operating 100 percent of the time and high wind speeds occur at the same time at all of the wind projects even though there is some geographic dispersion.

[TRADE SECRET DATA EXCISED]

Figure 3--DC Line Capacity and North Dakota Energy Supply 2015-2020

[TRADE SECRET DATA EXCISED]

Figure 4--DC Line Capacity and North Dakota Energy Supply 2026-2030

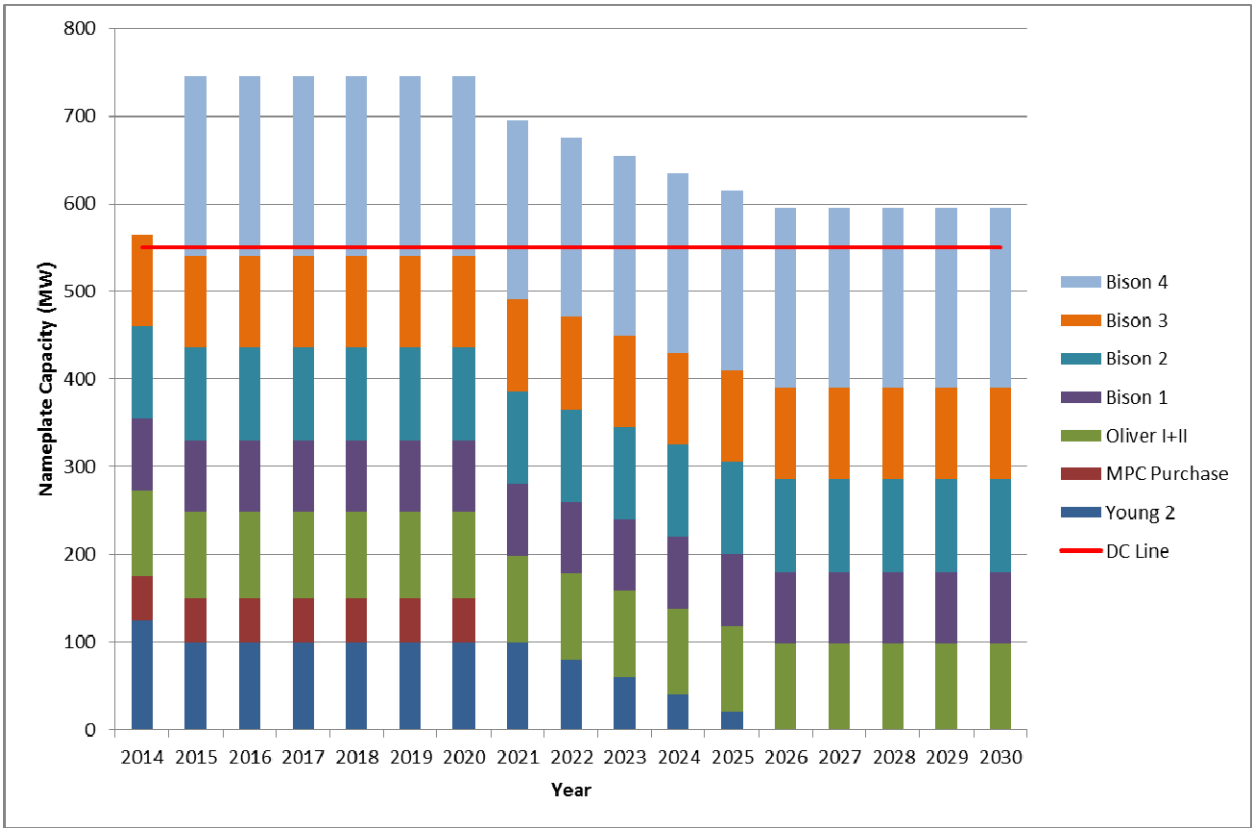

Figure 5--Nameplate Capacity of North Dakota Energy Supply and DC Line 2014-2030

To gain insight to the availability of the AC transmission system, Minnesota Power monitors the export limit (flowgate) around North Dakota's north, south and east borders, commonly referred to as the North Dakota Export or NDEX. The flowgate is comprised of nineteen high voltage (115 kV and higher) transmission lines in North Dakota, South Dakota, and Minnesota. The NDEX currently has a limit of 1,950 MW for exports from North Dakota, which if exceeded can cause system instability. The total current firm transfer capability of the NDEX is already reserved under long-term contracts.[16]

[TRADE SECRET DATA EXCISED]

[16] Additional planned transmission investments in North Dakota and the Upper Midwest will increase the NDEX.

[TRADE SECRET DATA EXCISED]

Figure 6--NDEX Limits

The Bison 4 project has firm transmission for a large portion of its energy on Minnesota Power's DC Line. A small portion of Bison 4 energy will rely on non-firm transmission using the AC transmission system, which has a sizeable amount of unused capacity. Availability of the AC transmission system is not expected to create significant limitations on the Bison 4 wind farm. Given Minnesota Power's experience in operating and maintaining AC and DC electrical transmission systems, coupled with experience gained from delivering energy from its existing

wind farms, and MISO's accreditation of the capacity for the interconnection agreement, Minnesota Power is confident in its ability to deliver power generated by the Bison 4 Project to the Company's customers.

B. Project Schedule and Permitting

Minnesota Power has secured the appropriate permits from the NDPSC and Oliver County. Minnesota Power filed an application for a Certificate of Site Compatibility[17] with the NDPSC for Bison 4 (NDPSC Case No. PU-13-127) in May 2013. The NDPSC held a public hearing on the Bison 4 application on September 13, 2013, and completed its review process and approved Minnesota Power's application on September 25, 2013. Permits for construction of the Tri-County Substation and the 230 kV transmission line extension (NDPSC Case No. PU-11-620) were approved by the NDPSC in May 2012.

The proposed project schedule is listed in Table 1, with a December 2014 commercial operation date. Events or actions that could impact the project completion date include late delivery of Siemens turbine components or adverse weather conditions during construction or turbine erection. Mitigation of these possible project completion impacts is further addressed in Section VI. Bison 4 Project Risk Factors beginning on page 27.

Table 1. Project Schedule

Task	Anticipated Date
Construct Access Roads and Crane Hardstandings	October 2013 - July 2014
Construct Reinforced Concrete Foundations	October 2013 - July 2014
Construct 34.5kV Collector	October 2013 - July 2014
Construct Tri-County Substation	October 2013 - July 2014
Construct Extension of 230 kV Transmission Line	November 2013 - February 2014
Receive / Store Wind Turbines On-site	June - October 2014
Erect Wind Turbines	July - November 2014
Conduct Commissioning / Start-up	August - December 2014
Begin Commercial Operation	December 2014
Register Project with M-RETS	December 2014

[17] See N.D.C.C Ch. 49-22 and N.D. Admin. Code Art. 69-06 for the applicable North Dakota siting requirements.

IV. ADDITIONAL TRANSMISSION UPGRADES

A. Project Overview

In addition to the transmission related additions discussed in Section II, upgrading of the Center-Heskett 230 kV transmission line that runs between Center, North Dakota and Mandan, North Dakota, is required in order to realize the full benefits of the Bison 4 Project and to assure deliverability. To accomplish this upgrade, Minnesota Power has entered into a Facility Construction agreement with Minnkota Power to increase the line capacity from a summer emergency rating of 438 MVA to 591 MVA.[18] Minnkota Power is responsible for 54 percent of the cost to upgrade the line. Minnesota Power is responsible for the remaining 46 percent of the upgrade costs.

The impact to the Center-Heskett 230 kV line was identified in the original System Impact Study ("SIS") that was performed as a condition of the right to interconnect to the transmission system. At the time the study was completed in late 2009, the expectation was that an existing Special Project System ("SPS") designed to detect abnormal system conditions and take automatic, pre-planned, corrective action would mitigate any post-contingent loading on the Center-Heskett 230 kV line. Since the time of the system impact study, Minnkota Power has indicated the desire to eliminate the SPS primarily due to ongoing maintenance issues. According to the SIS, the additional AC system injection created by the Bison 4 Project[19] would overload the Center-Heskett 230 kV line for critical AC system contingencies without the SPS. Upgrading the Center-Heskett 230 kV line to 591 MVA will mitigate the risk of overloading on the Center-Heskett 230 kV line.

B. Project Schedule

The upgrade of the Center-Heskett 230 kV line is expected to be completed by fall 2014, prior to the planned in-service of the Bison 4 Project. Starting in August 2013, Minnkota Power began the process of installing PhaseRaisers in order to gain needed ground clearance to support

[18] MVA stands for Megavolt-ampere and is the unit of measure of apparent power. It is composed of both real (megawatt or MW) and reactive (Megavolt ampere-reactive or MVAr) power.

[19] Interconnection request GS664 & GS665.

a higher line rating. Minnesota Power will update the Commission on the projected completion date of the upgrade.

V. SUMMARY OF INVESTMENTS, EXPENDITURES, AND CUSTOMER IMPACTS

A. Estimated Capital Investment

Minnesota Power estimates the Bison 4 Project will have a total capital cost of approximately $345 million. This total cost assumes that current cost recovery will begin in April 2014. Minnesota Power and its contractors will be responsible for project management, permitting, licensing and approvals, site preparation, balance of plant construction, and ancillary facilities. Siemens is responsible for delivery of all turbine components to the project site, as well as erection, installation and commissioning of the wind turbines. Minnesota Power will own all equipment and facilities that comprise the Bison 4 Project. The estimated capital investment compares favorably to other recent wind projects in the region, as illustrated in Figure 10--Estimated Annual Ownership Costs vs. Replacement Energy Purchases on page 42.

Minnesota Power anticipates that ongoing capital expenditures will be required to enable reliable operation of the turbines over a 35-year life. Although most wind manufacturers include a 20-year wind turbine life as part of their technical design certification literature, industry experts recognize that the 20-year design certification is based upon certain components reaching the end of their operational life. Most components will operate well beyond the 20-year design certification; however, the turbines are likely to require a moderately intensive refurbishment after 20 years to extend the operating life. As a result, Minnesota Power has budgeted for this ongoing capital expenditure beyond the 20-year design certification of the wind turbine within its assumptions and will, in the future, seek the required regulatory approval(s).

B. Operations and Maintenance

Minnesota Power has entered into a three-year Service and Maintenance Agreement with Siemens. This contract provides for services to support warranty obligations and turbine performance guarantees. Minnesota Power plans to assume full operation and maintenance ("O&M") activities after the warranty period. Minnesota Power anticipates O&M expense for the Bison 4 Project to be approximately **[TRADE SECRET DATA EXCISED]** per year starting in 2015. This cost is an estimate and is based upon the cost to operate similar facilities that are owned by the Company, with incremental benefits applied to the Bison 4 Project location because of its proximity to the other Bison Project sites.

C. Estimated Customer Impact

Operationally, Minnesota Power projects that, over a 35-year life, the Bison 4 Project will substantially benefit Minnesota Power's customers, after consideration of the benefits of the avoided costs of purchased power and fuel. For example, analysis shows that the Bison 4 Project causes a decrease in customer power supply costs compared to the next lowest cost alternative, by an estimated $118 million during the 20-year study period of 2013-2034. See Section VIII, pages 37-41. The projected revenue requirements for the Bison 4 Project, net of the estimated benefit from foregone purchased power and fuel costs, result in an annual net benefit to Minnesota Power customers starting in the first year of operation and continuing through the end of the 35-year project (see Figure 8--Generation Mix - 2005 vs. 2015 on page 35). In light of the substantial renewable energy benefits the Bison 4 Project provides to customers and the projected net power supply cost savings for all years after the Project begins operating, Minnesota Power believes the rate impacts to all customer groups are reasonable.

For the twelve-month period ending March 31, 2015, the total Bison 4 revenue requirements represent a modest increase in total electric revenue of approximately 2.8 percent. By the second twelve-month period ending March 31, 2016, this increase would decline to 2.2 percent. Factoring in the avoided purchased power and fuel costs, there would be net benefit or decrease of 0.4 percent for the twelve-month period ending March 31, 2016.

Table 2 on page 26 summarizes the estimated project revenue requirements and rate impacts by customer class and the impact net of estimated foregone purchased power and fuel costs. For the average residential customer, the rate impact for the first twelve months of the Bison 4 Project would be approximately $2.16 per month. This would decrease to $1.75 per month in the second twelve-month period and further decrease to $1.72 per month by the third twelve-month period. The net impact on the average residential customer in the first year of operation when the estimated savings due to the displaced purchased power and fuel consumption are factored in would be a net benefit of $0.32 per month or a 0.41 percent rate decrease. By the second year of operation the customer impact including the savings due to displaced purchased power and fuel consumption is expected to be a net benefit of $0.45 per month or a 0.60 percent rate decrease. A net benefit to Minnesota Power customers will

continue through the life of the Project, as demonstrated in the public interest section (see Section VIII), when all power supply factors are included.

For Large Power customers, the estimated rate impact for the first twelve months of the Bison 4 Project would be approximately 0.225¢ per kWh of energy. This would decrease to approximately 0.183¢ per kWh of energy by the second twelve-month period and further decrease to 0.179¢ per kWh of energy by the third twelve-month period. The net impact per kWh including estimated purchased power and fuel cost savings would be a net benefit of 0.033¢ per kWh in the first year of operation. The estimated rate impact per kWh for the second year of operation would be a net benefit of approximately 0.047¢ per kWh or a decrease of 0.89 percent. A net benefit to Large Power customers will continue through the life of the Project when all power supply factors are included.

D. Tax Matters

Accelerated tax depreciation benefits customers by reducing rate base, thereby reducing the base on which the rate of return component of revenue requirements is calculated when establishing customer rates. While the tax benefits that are generated from accelerated tax depreciation on wind assets will be a benefit to customers, the ability to generate a current cash benefit from these deductions will be spread out over future years due to tax net operating losses ("NOLs"). In 2010 and 2013, federal tax legislation provided for 50 percent and 100 percent bonus tax depreciation on qualified additions between 2010 and 2013. These federal legislative actions benefited the Bison 1, 2 and 3 Projects, and created tax NOLs for tax years 2010, 2011, 2012 and 2013. Bison 4 has an anticipated in-service date of December 2014. At this time, the possibility of the extension of bonus tax depreciation beyond 2013 is unknown. Under current tax depreciation rules there will not be a large amount of tax depreciation for 2014 and consequently, Minnesota Power is not projecting a tax NOL for 2014. However, the majority of wind property qualifies for a very short tax life of 5 and 1/2 years, resulting in a large amount of second year tax depreciation. Therefore, Minnesota Power does anticipate a tax NOL in 2015.

When the cash benefit from accelerated tax depreciation is deferred for future realization it creates deferred tax assets ("DTAs") for the tax NOLs. These DTAs are applied as an addition to rate base in calculating customer rates. In the Company's 2011 Transmission Factor Filing (Docket No E015/M-11-695), the Department of Commerce – Division of Energy Resources

reviewed Minnesota Power's methodology of applying the DTAs from the NOLs to rate base. Their recommendation was to use a hybrid approach when accounting for the NOLs in the Transmission and Renewable riders. The hybrid approach consists of using the lower of the amount of NOL DTA calculated based on the stand-alone rider method or the consolidated method. Based upon this recommendation, Minnesota Power has applied the hybrid method to use the lower of the stand-alone rider method or the Minnesota Power consolidated tax liability method for the most recent Renewable Factor Filing as well as with this Petition filing.

The consolidated method uses a first in, first out project methodology as to which projects will no longer have any consolidated NOL reflected in the calculation. This consolidated calculation was coordinated between both the Transmission Factor Filing and the Renewable Factor Filing to ensure that each project is removed in order and no projects are duplicated or missed in the removal of the DTA for the NOL. Total NOLs used in the Transmission and Renewable Factor Filings are limited to the total Minnesota Power available NOL. This overall NOL limitation was applied to the Bison 3 Project in the latest Renewable Factor Filing as the Bison 3 Project was the last project in service.

This Bison 4 Project will now increase the amount of total Minnesota Power NOL for the projected NOL in 2015 due to the large amount of wind tax depreciation. This additional estimated NOL layer over the amount of consolidated NOL limitation included in the Bison 3 Project is included in this customer impact calculation, and will increase the levelized cost of the Bison 4 Project. At the time of the 2013 Renewable Factor Filing, Minnesota Power expected to fully utilize the NOL carryforwards by 2016. With the Bison 4 Project, Minnesota Power now estimates that it will fully utilize all NOL carryforwards by 2017. This estimate assumes that bonus tax depreciation will not be extended to 2014.

Prior to the additional PTCs earned by the Bison 4 Project, the Company was anticipating full utilization of all PTCs generated by 2022, the tenth and last year of PTC generation for Bison 3. With the addition of the Bison 4 Project, Minnesota Power currently anticipates utilization of all PTCs by 2027. The total impact of both the NOL and PTC deferred tax assets is an increase of approximately $9 per MWh, for a total levelized cost of about $30 per MWh when all tax impacts are considered.

For revenue requirement calculation purposes, Minnesota Power also believes the project would qualify for the North Dakota Investment Tax Credit ("NDITC"). However, due to the amount of credits already earned from the Bison 1 Project, no additional tax benefit is expected for Bison 4 from the NDITC. Based on Minnesota Power's current estimate of North Dakota taxable income, all tax liability is anticipated to be fully offset by the credits earned from just Bison 1 through 2035. If any additional NDITC benefit is realized from Bison 4 by Minnesota Power, it will be included in the revenue requirements in the year realized.

The revenue requirements for rate impacts, as shown in Table 2 below, include estimates of the effects of the deferred utilization of the DTAs for the NOLs and the PTCs for the Bison 4 Project impacts. The precise utilization date of the deferred tax benefits is uncertain due to potential future legislation, as well as other project costs and timing, and will be refined for the subsequent Bison 4 Project cost recovery petition.

Table 2. Bison 4 Project Estimated Customer Impact

	Estimated Rate Impact			Net of Estimated Energy and Fuel Savings (Note 2)	
	CWIP	In Service			
12 months ending March	**2015**	**2016**	**2017**	**2016**	**2017**
MN Juris Rev Req. $000	21,622	17,540	17,177	(3,177)	(4,516)
Rate Class Impacts (Note 1)					
Residential					
Avg Current Rate (¢/kWh)	9.403	9.403	9.403	9.403	9.403
Increase (¢/kWh)	0.266	0.216	0.212	(0.039)	(0.056)
Increase (%)	2.83	2.30	2.25	(0.41)	(0.60)
Avg Impact ($/mth)	2.16	1.75	1.72	(0.32)	(0.45)
General Service					
Avg Current Rate (¢/kWh)	9.398	9.398	9.398	9.398	9.398
Increase (¢/kWh)	0.247	0.201	0.196	(0.036)	(0.052)
Increase (%)	2.63	2.14	2.09	(0.38)	(0.55)
Avg Impact ($/mth)	6.86	5.58	5.44	(1.00)	(1.44)
Large Light & Power					
Avg Current Rate (¢/kWh)	7.494	7.494	7.494	7.494	7.494
Increase (¢/kWh)	0.223	0.181	0.178	(0.033)	(0.047)
Increase (%)	2.98	2.42	2.38	(0.44)	(0.63)
Avg Impact ($/mth)	508.26	412.54	405.70	(75.21)	(107.12)
Large Power					
Avg Current Rate (¢/kWh)	5.299	5.299	5.299	5.299	5.299
Increase (¢/kWh)	0.225	0.183	0.179	(0.033)	(0.047)
Increase (%)	4.25	3.45	3.38	(0.62)	(0.89)
Avg Impact ($/mth)	124,973	101,645	99,423	(18,329)	(26,105)
Municipal Pumping					
Avg Current Rate (¢/kWh)	8.564	8.564	8.564	8.564	8.564
Increase (¢/kWh)	0.369	0.299	0.293	(0.054)	(0.077)
Increase (%)	4.31	3.49	3.42	(0.63)	(0.90)
Avg Impact ($/mth)	44.74	36.25	35.52	(6.55)	(9.34)
Lighting					
Avg Current Rate (¢/kWh)	15.090	15.090	15.090	15.090	15.090
Increase (¢/kWh)	0.279	0.226	0.221	(0.041)	(0.058)
Increase (%)	1.85	1.50	1.46	(0.27)	(0.38)
Avg Impact ($/mth)	0.41	0.33	0.32	(0.06)	(0.08)

Notes:

1. Average current rate based on Final General Rates in 2009 Rate Case without riders (E015/GR-09-1151) adjusted to include current rider rates. Current rider rates include Renewable Resources Rider, Transmission Cost Recovery, CPA and estimated 2014 FPE.
2. Purchased energy and fuel savings will be realized by customers in the Fuel Adjustment Clause.

VI. BISON 4 PROJECT RISK FACTORS

Minnesota Power recognizes there are potential execution risks associated with the development of the Bison 4 Project as there are with any construction effort. The Company's goal is to deliver an on-time, efficiently built, competitive and reasonably priced wind energy project. The following areas are intended to provide the Commission, the Department, and other stakeholders with an understanding of the Company's efforts to identify and manage potential construction issues related to this Project. Minnesota Power has identified the key issues noted below that may impact this particular Project. These factors do not include general business risks that might impact any construction project or business operations or other risks that might impact any business enterprise.

A. Project Permitting & Regulatory Approval

Delays in obtaining project approval from the Commission could lead to construction delays.

Minnesota Power has accelerated the development of the Bison 4 Project, which is beneficial for its customers, because of favorable economic factors and projected customer load growth in the planning horizon. Minnesota Power has worked expeditiously and diligently to develop the Project, to take advantage of the present competitive economic market for wind turbines and meet the timing for use of the federal PTCs. The project economics for Bison 4 are similar to Bison 2 and Bison 3, and competitive with other comparable wind projects. A significant delay in review and approval from the Commission could delay construction of the Project.

B. Project Timing and Construction Cost

Construction delays or changes in scope could lead to increased project costs.

Project Timing

Minnesota Power has identified and is managing several initiatives to help support the planned in-service date for the Bison 4 Project. In order to manage the work and to mitigate potential delays, Minnesota Power has developed a detailed project schedule. Contractor

commitments have been secured in preparation to begin construction in fall 2013. Project construction will commence as early as feasible, given site, weather, component delivery and assembly timing constraints. An early construction start will provide flexibility in adjusting to unanticipated delays in site preparation or delivery of project components. Minnesota Power's experience with the construction of the Bison 1, 2 and 3 Projects, located adjacent to the Bison 4 Project site, will also help mitigate this risk.

Equipment delivery timing issues are addressed by scheduling the Siemens turbine components to arrive at the project site beginning in June 2014. This schedule is designed to allow time to complete the site preparation work prior to equipment delivery. The long lead time needed for manufacturing the Siemens turbine components could impact the project completion date. Minnesota Power's initiative to seek timely permitting and regulatory approvals allows ample time for turbine manufacturing, thereby greatly reducing the potential for equipment delivery delays that may impact the Project schedule. Further, the Siemens turbine supply agreement includes provisions designed to mitigate this risk.

Minnesota Power has secured adequate resources, both internally and externally, to ensure timely completion of the Bison 4 Project while managing construction costs.

Construction Costs

Minnesota Power developed detailed Project cost estimates based on the following:

- Recent wind project experience from Bison 1, Bison 2, Bison 3 and Taconite Ridge,
- Known local conditions and potential site specific issues,
- Turbine supply contract,
- Balance of Plant construction services contract, and
- Material supplier quotes.

Minnesota Power has also continued interaction with construction and engineering firms with experience on these types of projects.

Through its turbine supply agreement with Siemens, Minnesota Power has secured approximately **[TRADE SECRET DATA EXCISED]** of the total cost of the Bison 4 Project in a fixed fee contract. The scope of the turbine supply agreement includes the rotors (hub and blades), the nacelle, the towers and electrical systems. In the agreement, Siemens will also provide the delivery, erection, and installation of all turbine components, as well as commissioning of the units. The fixed fee nature of the agreement does not limit all cost increases. Changes due to project scope or timing that are not the responsibility of Siemens under the agreement could result in increased costs.

Additionally, Minnesota Power has secured contracts for Balance of Plant construction services and for the purchase of many of the major materials (e.g. collector cable and transformers) representing **[TRADE SECRET DATA EXCISED].** Minnesota Power acknowledges that the remaining **[TRADE SECRET DATA EXCISED]** of the Bison 4 Project cost estimate will become more precise when the procurement of additional services, equipment, and materials are secured. Minnesota Power acknowledges that material escalation and fuel price volatility may impact the project cost and has accounted for reasonable increases; however, larger than anticipated escalation of material and fuel could result in increased costs. Minnesota Power has initiated competitive bidding for the remaining components of the Bison 4 Project and will award contracts now that all required regulatory approvals have been received. This will allow Minnesota Power to secure pricing and terms on certain materials and services to reduce the overall risk of increased project costs.

C. Timing of Federal Production Tax Credit Utilization

Timing of federal Production Tax Credit utilization may cause price variability.

As discussed on pages 23-25, based upon current financial projections and the large amount of tax benefits to be received from the Bison wind projects, the Company's ability to fully utilize the tax benefits generated from this project will be extended into the future due to the Company's current tax appetite. Minnesota Power estimates that it will utilize the deferred tax assets discussed in this Petition by 2027. As the Company produces taxable income, the NOLs and corresponding deferred tax assets will be reversed and eliminated as an addition to rate base. The precise utilization date of the deferred tax benefits is uncertain, based upon future

Minnesota Power projects and timing and unanticipated future tax legislation. The uncertain timing of utilization of production tax benefits may create variability and directly impact the levelized cost of the Bison 4 Project.

D. **Energy Production – Delivery Curtailment**

Delivery curtailment of the energy produced from Bison 4 could increase operational costs per amount of energy produced.

Wind projects located on the North Dakota side of the North Dakota/Minnesota transmission constraint have some challenges in power delivery to customers in the eastern part of Minnesota. Minnesota Power plans to utilize and upgrade transmission capacity secured via the DC Line purchase, as well as available non-firm AC transmission, to support delivery of capacity and energy out of North Dakota to Minnesota Power's service territory. The DC Line is presently primarily used to transmit energy from Young 2 to Minnesota Power's and Minnkota Power's customers. As part of Minnesota Power's DC Line purchase, Minnkota Power is building a 345 kV line from Center, North Dakota to Grand Forks, North Dakota to transmit Minnkota Power's Young 2 energy to their customers and remove it from Minnesota Power's DC Line. This 345 kV line is planned to be in service in early 2014. Additionally, Minnkota Power and Minnesota Power are planning to upgrade the Center-Heskett 230 kV transmission line. As a result, Minnesota Power believes delivery curtailment risk of Bison 4 is a relatively low, near-term risk.

The Bison 2 and Bison 3 Project Orders require Minnesota Power to file with the Commission and Department the dates and amount of curtailment due to the use of the AC transmission system as soon as practical after a curtailment event. Curtailments are included in the Company's monthly Fuel and Purchased Energy Adjustment Reporting, as well as in the Annual Automatic Adjustment Report due on September 1st of each year. For the period of January through July 2013, Minnesota Power delivered **[TRADE SECRET DATA EXCISED]** of wind generated energy, while only experiencing an average of 8.87 percent curtailment solely as a result of using the AC transmission system. Minnesota Power expects with the planned transmission upgrades that the curtailment risk will decline.

Minnesota Power acknowledges there remains a long-term risk, as is present with any generation project, of AC or DC transmission outages and construction delay (i.e., weather related, maintenance, etc.) which could temporarily curtail wind delivery. Minnesota Power believes the risk with the Bison 4 Project is far less because of its access to firm transmission on the DC Line, compared to wind projects that would need to construct new transmission lines to interconnect to the grid and provide delivery to Minnesota Power.

E. Failure to Meet PTC Qualification Requirements

To qualify for the federal PTC it is necessary to begin construction of the wind facility before January 1, 2014. Internal Revenue Notice 2013-29 provides two methods that may be used to establish construction has begun. The first method is to start physical work of a significant nature. The second method is to meet the Safe Harbor provision requirement of incurring five percent or more of the total cost of the facility before January 1, 2014.

To mitigate the risk of not qualifying for the federal PTC, Minnesota Power is planning to meet both the physical construction and five percent Safe Harbor requirements. With timely approval of the Certificate of Site Compatibility permit by the NDPSC, Minnesota Power will begin physical construction of the access roads, turbine foundations, and collector system in October 2013. Additionally, Minnesota Power will spend more than five percent of the total project cost on project design and materials in 2013. This will insure the Bison 4 Project qualifies for the PTC even if physical construction is delayed.

VII. PROJECT COMMUNICATION AND FILING

Under the renewable resources rider statute, Minn. Stat. § 216B.1645, when Minnesota Power seeks a rate adjustment under a rider it is required to provide cost justification. Minn. Stat. § 216B.1645, subd. 2a. For the Bison 4 Project, Minnesota Power has identified two primary milestones where it would be important to communicate Project updates to the Commission, the Department and other stakeholders, in addition to any rider rate adjustment requests. The first milestone is when turbines are safely delivered to the Project site. The second milestone will occur when the Project is operational.

For the Center-Heskett 230 kV transmission line upgrade, Minnesota Power has identified two primary milestones where it would be important to communicate updates. The first milestone is when installation of the PhaseRaisers is complete. The second milestone is when the upgrade to the transmission line is complete. Minnesota Power will provide a status update in early 2014 with a projected timeframe for completing the upgrade.

Minnesota Power commits to informing the Commission, the Department, and other stakeholders in a timely manner about the achievement of these milestones. Minnesota Power also commits to providing timely information to stakeholders related to any significant impact on the schedule or cost estimates of this Project.

VIII. THE BISON 4 PROJECT IS IN THE PUBLIC INTEREST

A. Renewable Resource Supply and Overall Energy Portfolio

1. Overall Fit

Minnesota Power's renewable resource development is guided by its 2013 Plan that incorporates a diverse renewable strategy including hydroelectric, biomass, and wind resources to meet a growing customer base. The Bison 4 Project is a key component of this strategy, and brings Minnesota Power a step closer to completing its North Dakota wind initiative which began with the Commission's December 21, 2009, approval of Minnesota Power's purchase of the DC Line between Center, North Dakota and Duluth, Minnesota, and the implementation of the Bison 1, 2 and 3 Wind Projects.[20] Each of these actions has given Minnesota Power additional access to the unique and vast wind resource in west central North Dakota. The Bison 4 Project is the next significant step in Minnesota Power's plan to build cost effective wind resources for meeting the Minnesota renewable mandate and in reshaping Minnesota Power's generation portfolio. With an estimated $118 million savings in customer supply costs, compared to the next lowest cost alternative over the 20-year study period (2013-2034), the Bison 4 Project brings significant customer benefit over the 35-year life of the project and clearly is in the public interest.

Additionally, Minnesota Power's long-term outlook for energy and capacity needs supports Minnesota Power's decision to move forward with the Bison 4 Project. Minnesota Power is projecting significant growth in both demand and energy over the next decade. Planned additions by large retail customers and wholesale contract extensions out through 2019 keep Minnesota Power's long-term load growth projections[21] at an average 1.3 percent.

When it is fully operational in 2015, the Bison 4 Project will make up approximately 7 percent of Minnesota Power's retail energy supply adding approximately 835,000 MWh of renewable energy per year. As shown in Figure 7 on page 34, with the Bison 4 Project and its

[20] See Minnesota Power's DC Line (Docket No. E-015/PA-09-526), Bison 1 Wind Project (Docket No. E015/M-09-285), Bison 2 Wind Project (Docket No. E015/M-11-234), and Bison 3 Wind Project (Docket No. E015/M-11-626).

[21] Minnesota Power's June 2013Annual Electric Utility Forecast Report ("AFR") was used for the evaluation of the Bison 4 Project. The AFR contained several long-term scenarios for Minnesota Power's energy and demand requirements. The "Wholesale and Industrial Customer Addition Forecast Scenario," which contains the addition of the Essar taconite pellet facility in Nashwauk, Minnesota, was utilized as the expected outlook for the analysis.

broader North Dakota wind initiative, Minnesota Power is executing on its plans for compliance with the State RES. As outlined in Minnesota Power's 2013 Plan, Minnesota Power's North Dakota wind projects are projected to total about 595 MW (includes Bison 1, 2, 3 and 4, as well as Oliver I and II power purchase agreements ("PPA")) once implemented. The execution of this renewable strategy demonstrates that with the Bison 4 Project, Minnesota Power is continuing to diversify its power supply resources. The remaining renewable projects would be installed at a future date, depending on Minnesota Power customer needs, the project availability and cost, and general economic conditions.

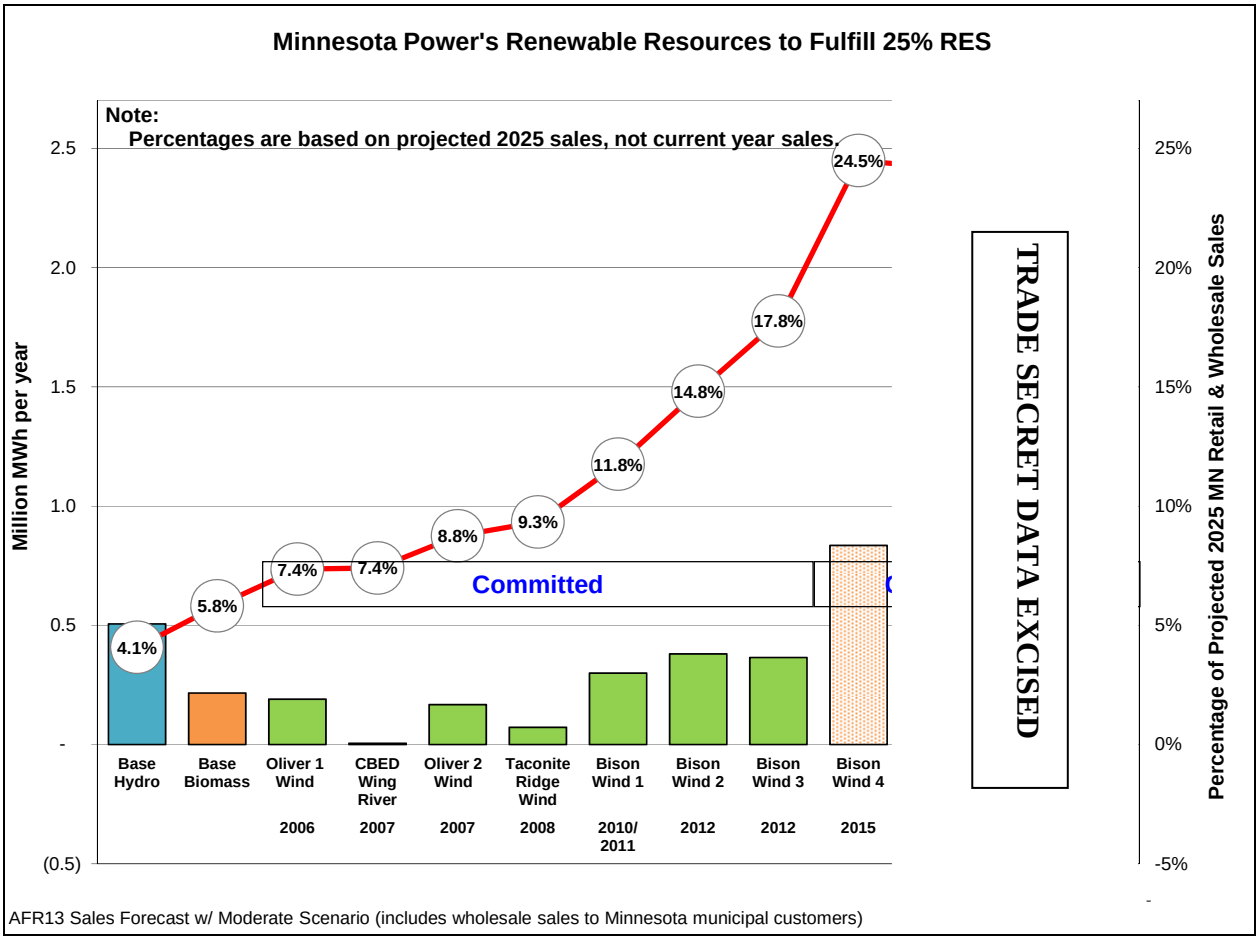

Figure 7--Minnesota Power's Renewable Plan to Meet the Minnesota 25% RES

As the economics demonstrate in this Petition, the Bison 4 Project is not only a critical piece of Minnesota Power's renewable plan, it also takes advantage of the favorable market for purchasing wind turbines and assures that the benefits of the soon-to-expire PTCs are secured. After its implementation, and consistent with Minnesota Power's 2013 Resource Planning

strategic goals,[22] the Bison 4 Project will bring Minnesota Power to a generation mix containing approximately 62 percent coal generation (see Figure 8), continuing the significant reduction from 2005 levels of approximately 95 percent coal.

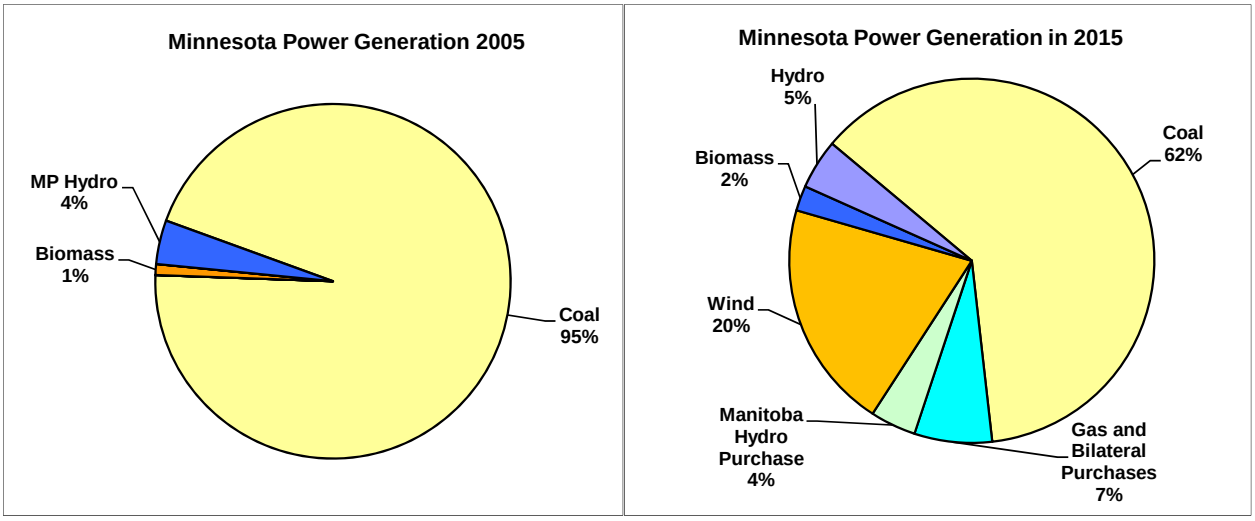

Figure 8--Generation Mix - 2005 vs. 2015

Minnesota Power's energy outlook is largely made up of its fleet of existing thermal and renewable generation. Minnesota Power also utilizes the wholesale energy market as a component of its power supply to augment its generation portfolio. Contract and wholesale market purchases make up the remainder of customer requirements. The wholesale energy market provides a reliable energy source for Minnesota Power's customers and allows Minnesota Power to continue to implement its least cost supply strategy. Figure 9 on page 36 shows the near term outlook for Minnesota Power's energy supply with the Bison 4 Project. A key transition in Minnesota Power's power supply is shown in 2013, as the first planned reductions of the Young 2 coal fired generating station take place as part of the gradual phase-out of the Young 2 power purchase to be completed by 2026.[23]

[22] See Section II, page 5 of the 2013 Plan (Docket No. E015/RP-13-53).

[23] Minnesota Power's phase-out of the Square Butte contract for Young 2 generation is part of the DC Line acquisition and was approved in Docket No. E-015/PA-09-526.

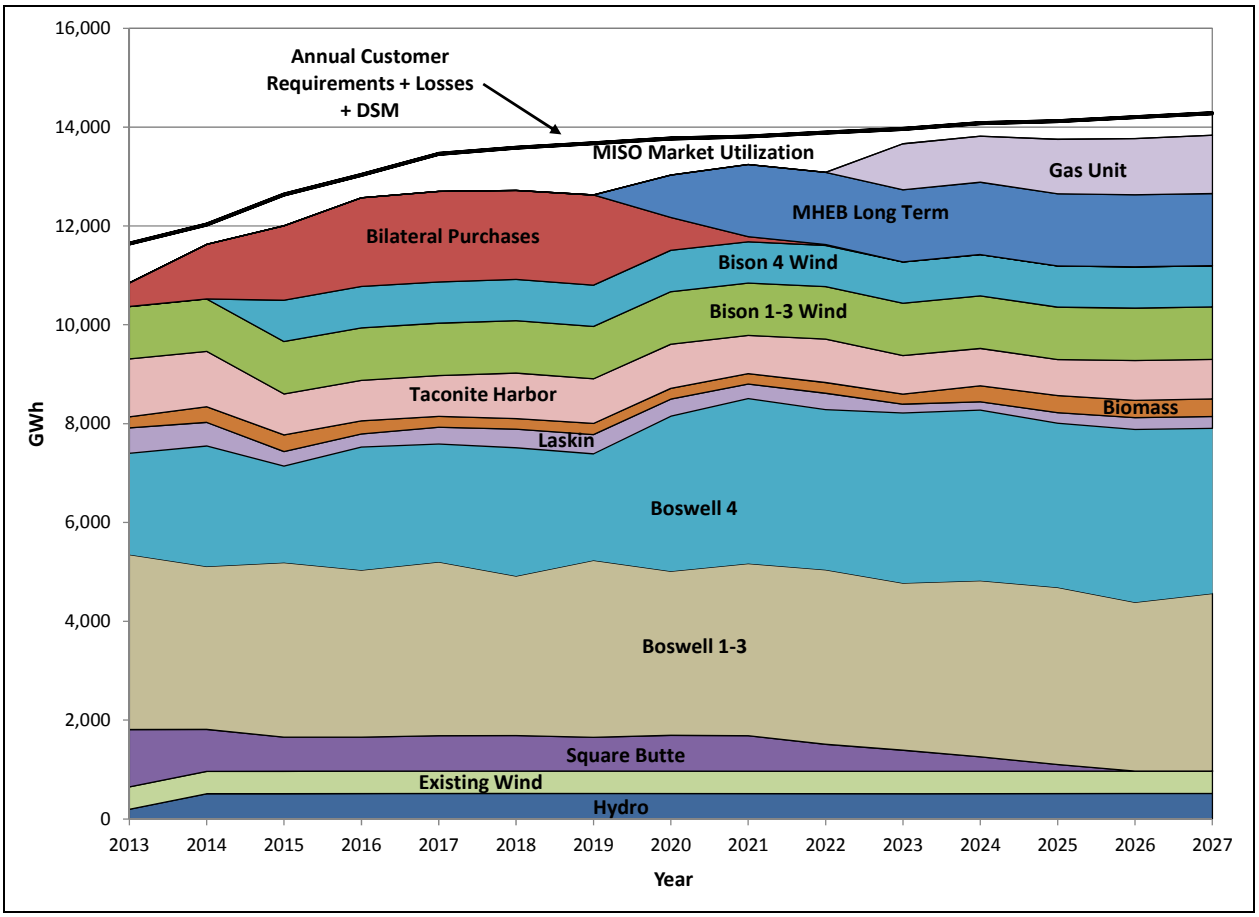

Figure 9--Minnesota Power Energy Supply Position with Bison 4 Project - 2013 to 2027

As Figure 9 shows,[24] and as project economics will demonstrate later in this section, the Bison 4 Project will increase Minnesota Power's wind energy supply by about 835,000 MWh per year and will largely offset market energy purchases (approximately 450,000 MWh per year) that would have occurred without the Bison 4 Project, thus firming up a low cost energy source for Minnesota Power's customers. By having economic energy supply benefits for Minnesota Power's customers, while also furthering implementation of its renewable plan, the Bison 4 Project is a solid fit with Minnesota Power's power supply needs. The following sections will further outline these benefits and reinforce how the Bison 4 Project is a timely and prudent step in meeting Minnesota Power's current resource strategy.

[24] This energy position represents the full capability of energy sources in Minnesota Power's Preferred Plan of its 2013 Plan. Actual dispatch will vary in real time operations.

2. Customer Impact Analysis

The timing of the Bison 4 Project will allow Minnesota Power to capture the benefit of the extension of federal PTC. To quantify these benefits and to ensure that the Project was the best option for Minnesota Power's customers, three key power supply analyses were performed:

1. Impact on Minnesota Power Customers: The Bison 4 Project was added to the current Minnesota Power supply portfolio to determine the customer impact of the 2014 addition.
2. Comparison to current wind projects: The Bison 4 Project was compared to other utility-owned wind projects.
3. Comparison to other available wind project alternatives: The Bison 4 Project was compared to alternative wind projects bid into Minnesota Power's March 2013 Wind Request for Proposals.

Analysis Item 1: Impact on Minnesota Power's Customers

To determine the value of the Bison 4 Project in Minnesota Power's long-term power supply, an incremental addition of the Project was included in Minnesota Power's power supply and evaluated in the Strategist production cost modeling software. The Strategist results quantified that the proposed Bison 4 Project will: 1) provide a lower power supply cost for Minnesota Power customers, 2) displace a significant amount of wholesale market purchases and some fossil fuel based generation as the new wind energy is added to the Minnesota Power system, and 3) reduce total CO_2 emissions, as well as other emissions.

The cost advantage that Minnesota Power's customers will receive through the addition of the Bison 4 Project in 2014 is largely due to a superior wind location, substantial federal PTC opportunity available with the timing of the Project, and the ability to use existing operations, maintenance, and transmission infrastructure. In combination, these factors produce significant savings over wholesale market costs in the future and allow Minnesota Power customers to see a near term benefit as the Bison 4 energy is utilized for customers in place of higher-cost market purchases.

To clearly show this cost advantage, Figure 9 demonstrates how the Bison 4 Project is immediately more economical than projected wholesale market energy purchases for Minnesota

Power customers. Illustrated in Figure 10 are the estimated ownership costs for the Bison 4 Project, annual and levelized (approximately $21 per MWh excluding tax impacts as discussed on pages 23-25), compared to the projected cost of purchasing this energy from the wholesale market over the same time period. Minnesota Power customers will benefit from this available cost savings in the near term and in the future based on current wholesale market outlooks.

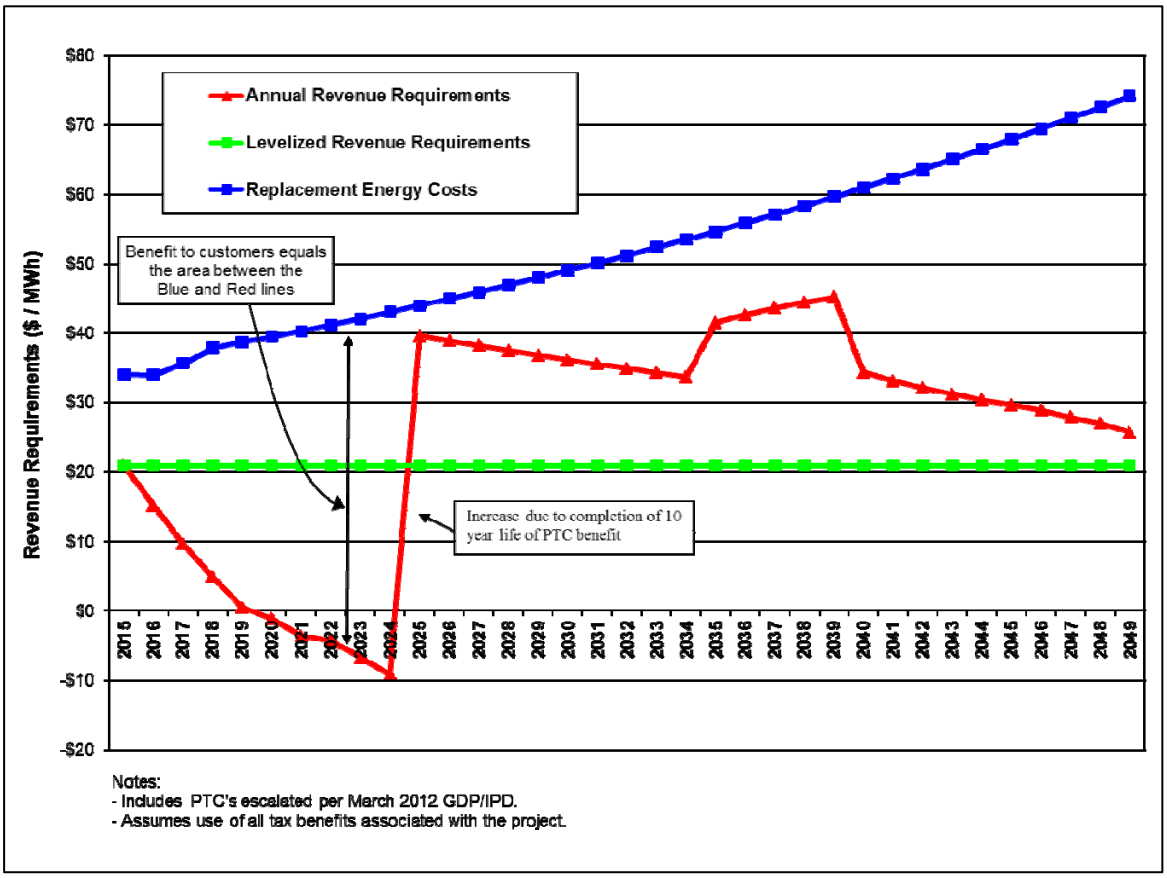

Figure 10--Estimated Annual Ownership Costs vs. Replacement Energy Purchases

To further quantify the cost savings of adding the Bison 4 Project, the Strategist production cost model was utilized to determine the total impact of adding Bison 4 to the Minnesota Power fleet by the end of 2014 by simulating a power supply dispatch. There were two Strategist scenarios used to simulate the addition of the Bison 4 Project.

- Scenario 1 – Baseline
- Scenario 2 – Baseline + Bison 4

The Baseline scenario contains all Minnesota Power thermal and renewable energy resources included in the Preferred Plan of its 2013 Plan.[25] Scenario 2 incrementally adds in the proposed Bison 4 Project and associated project costs to the Baseline scenario. The two scenarios are compared to each other to identify the power supply and cost impacts of adding the Bison 4 Project to Minnesota Power's system.

The 204.8 MW Bison 4 Project is anticipated to increase the renewable energy supply to Minnesota Power customers by approximately 835,000 MWh per year. As this energy is added to the Minnesota Power energy supply, existing market energy purchases and thermal generation that was projected to serve customer load are displaced. The chart in Figure 11 on page 40 demonstrates the annual amount of market and thermal generation energy that is projected to be displaced over the first 20 years of the Project. Figure 11 identifies that on average, the Bison 4 wind energy generated will displace a mix of 65 percent market purchases and 35 percent existing thermal generation each year. With the integration of the North Dakota wind resources, it is important to recognize that even though, on an annual basis, the wind displaces both market purchases and Minnesota Power generation, these generation resources remain in place. As North Dakota wind patterns fluctuate and produce variable daily output from wind resources, it is resources such as these that are available to cover customer requirements when the wind is not blowing. As Minnesota Power moves toward completion of its renewable plan, the Company will ensure the variability of its new set of North Dakota resources is efficiently integrated into its power supply and will look to diversify future resource additions to ensure on-going complementary supplies.

[25] The assumptions associated with each scenario and the associated resource planning evaluation conducted in Strategist are included in Appendix A.

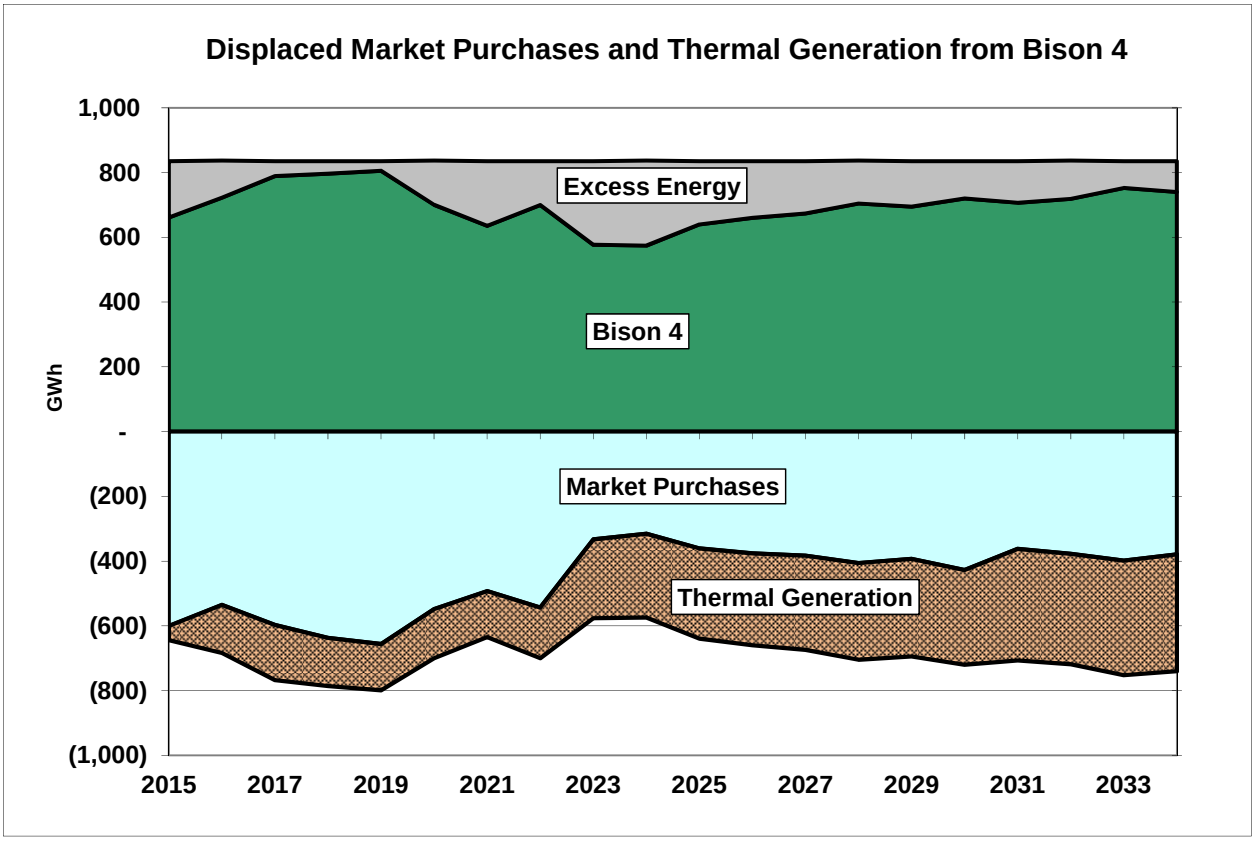

Figure 11--Energy Displaced by the Bison 4 Project

The reduction in market purchases and thermal generation use through the addition of Bison 4 also results in an associated reduction in emissions for Minnesota Power customers over the life of the project. Table 3 on page 41 summarizes the average avoided emissions in CO_2, sulfur dioxide ("SO_2"), nitrogen oxides ("NOx"), and mercury ("Hg") that are estimated to occur with the Bison 4 addition over the study period. Carbon dioxide is projected to see the greatest reduction with an average of 190,000 tons of CO_2 removed per year.

Table 3. Average Annual Avoided Emissions (2015-2034)

Effluent	Average Annual Reduction
Carbon (CO_2)	190,000 Tons
Sulfur Dioxide (SO_2)	114 Tons
Nitrogen Oxides (NO_x)	114 Tons
Mercury (Hg)	1 Pound

With low Bison 4 Project costs, associated emission reductions, and Minnesota Power's existing DC Line in place to deliver wind to Minnesota Power's customers, the benefits of this Project are clear. The resource planning evaluation that was conducted in Strategist confirmed that the net system cost impacts of the Bison 4 Project addition provide a benefit to Minnesota Power customers. When the costs of the Baseline and Baseline + Bison 4 scenarios are compared (see Table 4), the Bison 4 Project causes a decrease in customer power supply costs compared to the next lowest cost alternative by approximately 1.5 percent or an estimated $118 million over the study period 2013-2034.

Table 4. Strategist Power Supply Cost Summary ($2013, NPV 2013-2034)

Scenario	Cost in Millions	Percent Change
Baseline	$8,082	n/a
Baseline + Bison 4	$7,964	(1.5)

The customer impact analysis conducted for the Bison 4 Project shows that the Project provides a long-term cost savings for Minnesota Power customers over the life of the Project. The Bison 4 Project also furthers Minnesota Power's initiative towards reshaping its generation portfolio and obtaining additional carbon reduction as detailed in Minnesota Power's 2013 Plan.

Analysis Item 2: Comparison to current wind projects -other utility owned

To continue to evaluate if the Bison 4 Project would be in the best interest for Minnesota Power customers, the project was compared with Minnesota Power's other wind projects (Bison 1, Bison 2, and Bison 3) as well as other known utility-owned wind projects that were

recently announced or implemented. The cost ranges of the utility wind projects were found to be between $1495 per kW to $2507 per kW for wind projects installed during the period of 2010 to 2012. As demonstrated in Figure 12, the Bison 4 Project at $1678 per kW is lower cost than, or competitive with, other comparable utility-owned wind projects.

It should be noted that this is only a comparison of capital cost relative to capacity. It does not take into account energy generation. Bison 4 uses a larger capacity turbine, with a higher hub height and larger rotor diameter than the turbine used for Bison 2 and Bison 3. This increases the capital cost, but also generates more energy. The increased capital cost of Bison 4 is offset by increased energy production, resulting in a comparable total average cost of energy. Producing more energy with fewer turbines has the added benefit of reducing the impact on the surrounding area.

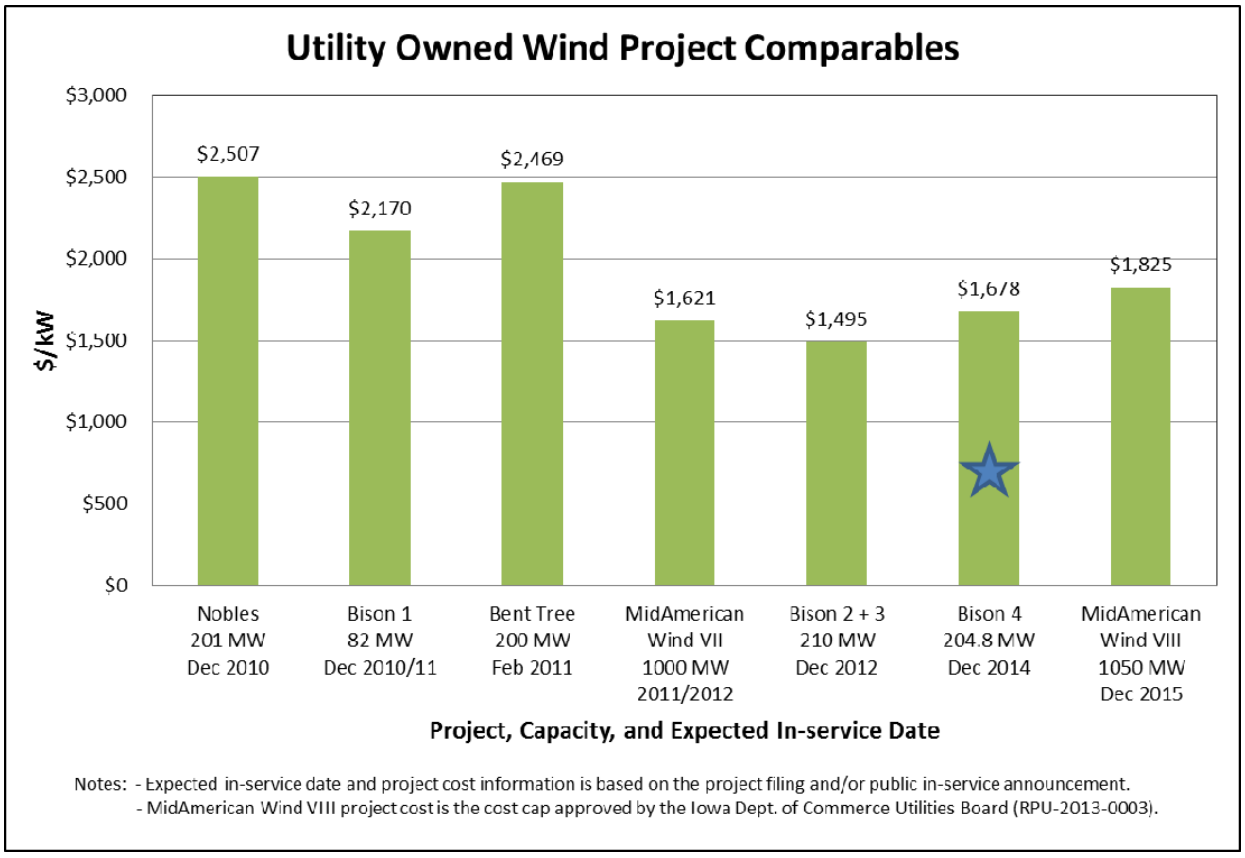

Figure 12--Utility Owned Comparable Wind Projects

This comparison is another way to demonstrate the opportunity currently available to Minnesota Power for wind generation development and the benefit that the Bison 4 Project will bring to Minnesota Power's customers if implemented.

Analysis Item 3: Comparison to other available wind project alternatives.

To determine if there were other viable opportunities for Minnesota Power to procure comparable wind power from another source rather than implement the Bison 4 Project, Minnesota Power solicited proposals for wind projects of up to 225 MW under a RFP in March 2013. Results of the process demonstrated that Minnesota Power's Bison 4 Project is the lowest cost option to bring additional wind energy into its power supply and is in the best interests of its customers rather than Minnesota Power securing wind energy via a PPA.

Proposals received through the RFP represented a wide geographic area in the Midwest and included over 2,000 MW in aggregate of wind projects (both standard and Community-Based Energy Development ("C-BED") structured), varying from PPA-only submittals to combinations of turn-key or build-own-transfer options. All were analyzed under a number of key criteria including: price; transmission interconnection and delivery; development, siting, and permitting plans; and bidder qualifications. Minnesota Power independently submitted its own proposal for the Bison 4 Project into the RFP for analysis with all other proposals, providing a direct comparison of market-based wind projects to Minnesota Power's self-build Bison 4 Project. An independent evaluation was completed, reviewing Minnesota Power's proposed project, as well as all RFP submittals, to determine the least cost option for Minnesota Power's customers. Exhibit 1 to this Petition provides the independent evaluator's opinion, a listing of the top ten lowest cost viable projects submitted under the RFP, in comparison to Minnesota Power's Bison 4 Project. The analysis demonstrates the clear difference in cost between these submitted projects and Minnesota Power's Bison 4 Project, supporting Minnesota Power building and owning the Bison 4 Project, versus purchasing wind energy via a PPA.

The primary decision criteria used to recommend moving forward with the Bison 4 Project after reviewing the RFP submittals were:

a. PPA and build-own-transfer proposals received are higher cost than Minnesota Power's estimate to build and own Bison 4.

   While Minnesota Power continues to be responsive to C-BED project inquiries, C-BED project proposals received in the RFP were not competitive with Minnesota Power's Bison 4 Project or the standard alternatives. All of the C-BED projects received in the

RFP were initially identified as having a substantially higher cost than Minnesota Power's Bison 4 Project.

b. A self-build option allows Minnesota Power to secure renewable energy from Bison 4 for the entire estimated 35-year useful life; the energy cost for this entire 35 years is based on the current, low installation cost of the project as identified in Figure 12. If Minnesota Power were to secure needed wind energy using a 20-year PPA, the energy for the final 15 years of a 35-year comparative life would need to be replaced after the term of the agreement, introducing much more uncertainty into the future wind energy cost.

c. The self-build option allows Minnesota Power the opportunity to leverage construction and operating experience gained during the successful installation of the adjacent Bison 1, 2 and 3 Wind Projects. Efficiencies will be captured by erecting all of the turbines (over 200 MW) in 2014 and building on existing long term relationships with local and regional contractors.

3. Strategic Benefit to Customers

The addition of the Bison 4 Project will allow Minnesota Power to continue to implement its current resource strategy to make significant strides to reduce carbon emissions, expand renewable energy supplies, and diversify energy sources away from a large reliance on coal resources, while lowering emissions and customer costs. Minnesota Power firmly believes that the climate change debate and renewable energy policy developments will continue to alter the electric utility supply environment. As communicated in its 2013 Plan, Minnesota Power is convinced that major initiatives, such as the Project proposed in this Petition, the completion of its renewable plan, and Minnesota Power's planned purchases from Manitoba Hydro, are necessary to ensure that Minnesota Power remains well positioned to face an evolving landscape with the dual requirements of managing both severe business cycles and carbon constraints. Optimizing Minnesota Power's geographic access to Canadian and North Dakota renewable supply options will be imperative as opportunities such as Bison 4 become available.

4. Specific Impact on RES Status and Compliance

With the Bison 2 and Bison 3 Wind Projects achieving commercial operation at the end of 2012, Minnesota Power's renewable energy supply increased to approximately 18 percent, which is greater than the 2016 RES[26] mandate of 17 percent. The addition of the Bison 4 Project would increase Minnesota Power's renewable energy supply by approximately 7 percent to allow Minnesota Power to exceed the 20 percent RES standard for 2020 early, while securing a low cost energy source for its customers. Additionally, Minnesota Power would be firmly on the path to achieving 25 percent[27] by 2025 under current load growth outlooks.

5. Minnesota Power's Use of Renewable Energy Credits ("RECs")

As with any generation project, economical project size is not an exact match with gradually growing need. Minnesota utilities register, bank, and retire renewable credits to comply with the RES[28] within the Midwest Renewable Energy Tracking System ("M-RETS"). The ability to bank excess credits in M-RETS provides a mechanism to secure the value of any excess credits that occur with the natural "lumpy" addition of resources on behalf of customers. Minnesota Power's customers also derive value from this system by having a reserve of credits that provide a hedge to handle specific additional needs that Minnesota Power anticipates will occur in the future. Those situations that need to be planned for include:

a. Variable Generation – Renewable wind and hydro generation resources are fundamentally variable by nature. For example, in just the last five years, Minnesota Power has seen its hydro generation levels vary by as much as 157,152 MWh annually. That amount is about 19 percent of the projected annual output of the Bison 4 Project. Banked RECs can help to provide some insurance in the face of variable output.

b. Project Delays – Minnesota Power has strategically focused on creating a diverse set of renewable generation resources to maximize its supply flexibility; however, a planned renewable addition can be delayed or canceled due to some unforeseen circumstance.

[26] Minn. Stat. § 216B.1691, subd. 2a.

[27] In accordance with the Commission's Order dated May 13, 2011, in Docket No. E999/M-10-989, Commission Consideration and Determination on Compliance with Renewable Energy Obligations and Renewable Energy Standards, wholesale sales to a distribution utility for distribution to that utility's retail customers, including municipalities, are included in the sales subject to REO/RES requirements.

[28] See Commission Order dated December 18, 2007 in Docket No. E-999/CI-04-1616.

Therefore, it is important to have time to react to changes that may occur as to when energy supplies come on line. RECs can help to afford flexibility for meeting RES requirements under these kinds of circumstances.

Minnesota Power views any banked or surplus RECs as a valuable customer asset, particularly in light of uncertainty in federal renewable energy action as well as future carbon-related legislation. Minnesota Power currently has no plans to sell any RECs. For Bison 1, the Commission adopted the Department's recommendation that any revenues from RECs flow back to customers through Minnesota Power's Renewable Resources Rider.[29] Minnesota Power also notes that Minn. Stat. § 216B.1645, requires that any revenues derived from renewable investments or expenditures offset rider revenue requirements. Therefore, as with Bison 1, any revenues from RECs generated by Bison 4 will flow back to customers through Minnesota Power's Renewable Resources Rider.

B. Adding the Bison 4 Project Now

The Commission's September 13, 2012 Order on Minnesota Power's baseload diversification compliance filing (Docket No. E015/M-09-1088) directed the Company to include in its next resource plan "scenarios that add 100 to 200 MW of wind capacity in the 2014-2016 time frame." Minnesota Power's 2013 Plan evaluation confirmed that additional wind energy would be beneficial for customers as part of its Preferred Plan. On January 2, 2013, the PTC was extended to wind energy production facilities that begin construction prior to January 1, 2014, as part of the American Taxpayer Relief Act of 2012 legislation. These actions, along with economic conditions keeping wind energy a competitive low-cost energy source, Minnesota Power's transmission access to the vast North Dakota wind energy and the experience gained with its Bison 1, Bison 2 and Bison 3 Wind Projects all signal that the time is right for Minnesota Power's fourth phase in its North Dakota wind development.

1. Project Cost Environment

The bulk of the cost for wind generation lies primarily in the upfront capital components. The last minute extension of the federal PTC on January 2, 2013, combined with the requirement to begin construction before January 1, 2014, created uncertainty in the U.S. wind energy

[29] Approved by the Commission on July 21, 2010 (Docket No. E015/M-10-273).

market. As a result, many wind turbine manufacturers have excess manufacturing capability resulting in advantageous turbine pricing. At the same time, wind turbine technology also continues to evolve. The most recent improvements include longer turbine blades, higher hub heights, greater nameplate capacity, and control upgrades. These improvements provide greater energy output from each turbine.

Minnesota Power is well positioned, with its DC Line available for delivery of the wind energy, to install additional wind and secure the lower costs for its customers. In that regard, Minnesota Power has aggressively worked with turbine suppliers to secure pricing for the Bison 4 Project that provides the most economical wind project for its customers.

2. Production Tax Credit

The federal PTC has been extended to wind energy production facilities that begin construction prior to January 1, 2014. Receipt of the PTC is a valuable component of the Bison 4 Project which provides customers with cost effective energy. Without the PTC, the levelized cost of the Bison 4 Project would increase to approximately $44 per MWh. By securing the PTC, customers will receive significant benefits generated by the PTCs in the initial 10 years of operations**.**

The extension of the federal PTC to facilities beginning construction on or after January 1, 2014, is unknown. The federal PTC is a key driver in keeping wind costs competitive as compared to renewable alternatives, and its termination would mean that the cost of new wind would rise for Minnesota Power customers. As such, beginning construction of the Bison 4 Project prior to the current expiration of the federal PTC allows Minnesota Power to realize the advantage of this credit for its customers.

3. Future Carbon Cost Risk Mitigation

Minnesota Power's generation mix is presently dominated by coal as shown in Figure 8 on page 35. Although the low cost power from these resources has served customers well, in a future carbon constrained world, what was a low cost advantage could become a high cost risk, depending on the magnitude and timing of a carbon tax. In addition, legislation has established

carbon reduction goals for the state that identify the need to take action.[30] While the timing of any carbon emission restrictions is not certain at this time, delaying resource shifts until carbon reduction requirements are absolute mandates will put Minnesota Power and its customers at a competitive disadvantage. In June 2013, President Obama directed the Environmental Protection Agency to take specific actions by June 2016 in an effort to reduce power plant carbon pollution. As a zero carbon resource, the Bison 4 Project provides Minnesota Power's customers the advantage of obtaining the benefits of meeting the RES cost-effectively as well as working toward a steady reduction in Minnesota Power's carbon emissions.

4. Optimize Minnesota Power Wind

Minnesota Power's Preferred Plan presented in its 2013 Plan further addressed Minnesota Power's rationale for advancing RES compliance as a prudent action in that it allows Minnesota Power to secure best available sites for wind project development while evolving and reshaping Minnesota Power's generation fleet. Minnesota Power has site control of property directly adjacent to its Bison 1, 2 and 3 wind farms to be used for development of the Bison 4 Project, as identified in Figure 1 on page 10. This property, due to its proximity to the Bison 1 project site, allows Minnesota Power to leverage the 230 kV transmission line investment made for Bison 1 to deliver the energy to Minnesota Power's DC Line.

By locating the Bison 4 Project adjacent to Bison 1, 2 and 3, Minnesota Power not only realizes the advantages of existing infrastructure, but also captures the benefits of the high-quality North Dakota wind resource. North Dakota wind is the foundation of Minnesota Power's renewable plan and provides cost benefits to its customers over development of wind in its control area located in Northeastern Minnesota. The resource near New Salem, North Dakota covers a wide geographic area and has a high annual capacity factor (above 40 percent), depending on turbine selection. Figure 13 on page 49 illustrates U.S. wind resources—the darker areas indicate better wind locales. Note the superior nature of wind supply in the Dakotas and Minnesota's Buffalo Ridge in the southwest portion of the state.

[30] Minn. Stat. Ch. 216H.

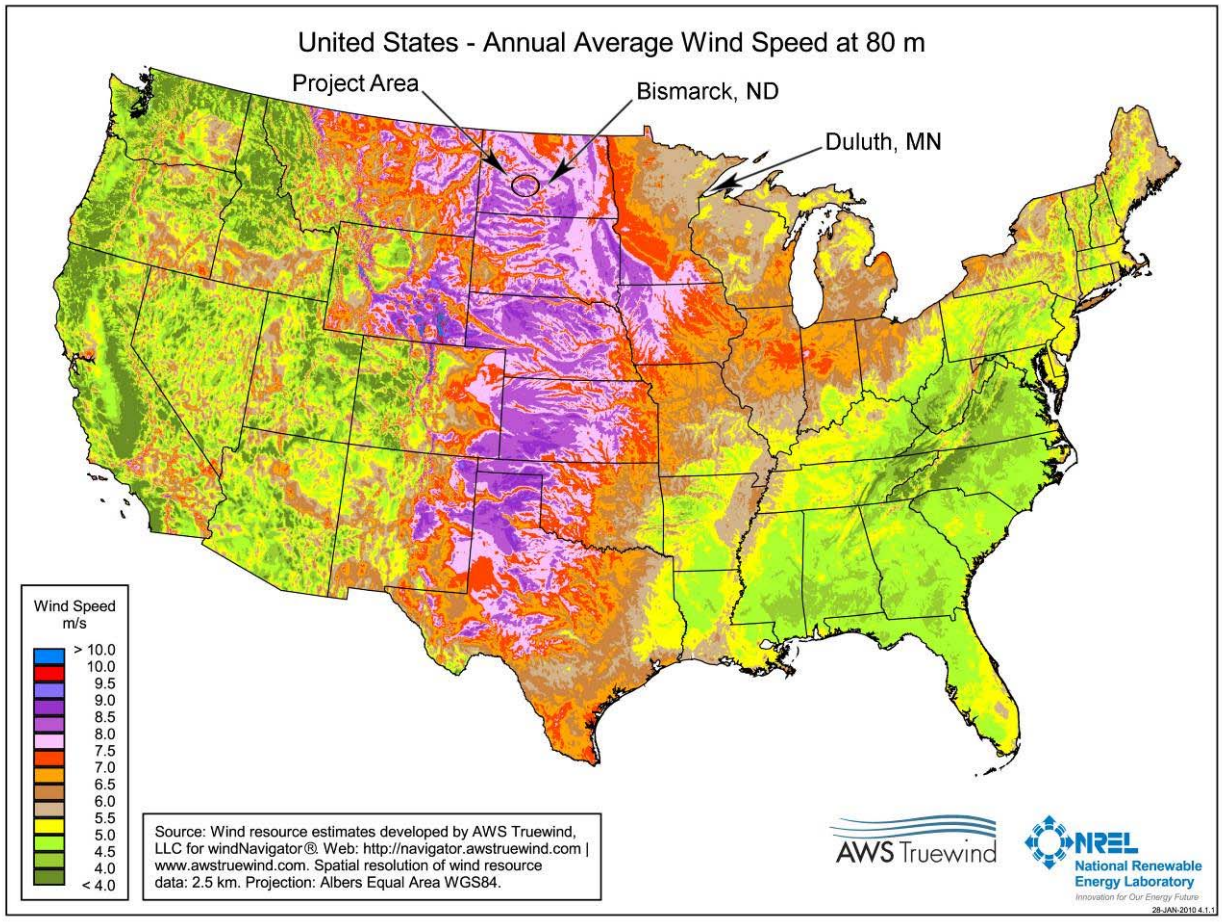

Figure 13--USA Average Wind Power Map

Continuing Minnesota Power's renewable strategy, which integrates its defined North Dakota wind development, coupled with the transmission afforded by the DC Line, offers Minnesota Power customers a very favorable long-term plan for meeting the RES and reshaping Minnesota Power's generation fleet.

IX. CONCLUSION

Minnesota Power respectfully requests that the Commission approve investments and expenditures related to the Bison 4 Project pursuant to Minn. Stat. § 216B.1645. Minnesota Power development of this 204.8 MW wind project will facilitate compliance with the requirements under Minn. Stat. § 216B.1691. Minnesota Power believes moving forward with the Bison 4 Project now has multiple benefits for its customers including a competitive installed cost for building a wind project, availability of the federal PTC, avoidance of higher-cost market energy purchases, and an ideal location that combines the strong wind resource in North Dakota with the proximity to existing transmission lines. Minnesota Power looks forward to working with the Commission and other interested stakeholders to implement the Bison 4 Project.

Dated: September 27, 2013

Respectfully submitted,

Lori Hoyum
Policy Manager
Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 355-3601
lhoyum@mnpower.com

Appendix A: Bison 4 Wind Project Assumptions and Outlooks

Appendix A provides the assumptions and outlooks used in Minnesota Power's evaluation that identified the Bison 4 Wind Project ("Bison 4 Project") is in the public interest. The analysis supports the statements and data presented in Section VIII of the Bison 4 Project Petition ("Petition") that substantiates why moving forward with the 204.8 MW wind project, at this time, is in the best interest of Minnesota Power customers.

The following section provides a summary of the key economic modeling assumptions and basis that Minnesota Power utilized in the Strategist Proview analysis completed for the Bison 4 Project. The assumptions used in the economic evaluation align with the assumptions used in Minnesota Power's 2013 Integrated Resource Plan ("2013 Plan") unless noted otherwise.

A. Base Case Economic Modeling Assumptions – a review of the base economic assumption used in the analysis for the Petition.

B. New Asset Resources – A description of new resource additions included in the Baseline Scenario Power Supply.

C. Sensitivity Analysis Results

D. Other Changes Made for the Petition Evaluation

A. Base Case Economic Modeling Assumptions

Study Period

1. The focus of the Bison 4 Project analysis is 2013 thru 2034. The power supply cost shown in the Petition are the net present value of cost from 2013 thru 2034 and are reported in 2013 dollars, unless noted otherwise.

Baseline Scenario Power Supply Assumptions

1. The Baseline Scenario Power Supply includes the generation resource deicisions of the short-term and long-term action plans indentified in Minnesota Power's 2013 Plan with the exception of the new wind addition identified in the Company's short-term action plan which is excluded.
    a. Short-term action plan with wind excluded (2013-2017)
        i. Refuel Laskin Energy Center ("LEC") Units 1 and 2 with natural gas in 2015
        ii. Shut down Taconite Harbor Energy Center ("THEC") Unit 3 ("THEC3") in 2015
        iii. 50 MW bilateral bridge purchases from 2016 thru 2019
        iv. Retrofit of Boswell Energy Center ("BEC") Unit 4 ("BEC4") with environmental controls

b. Long-term action plan (2018-2027)

   i. New 200 MW share of a combined cycle natural gas facility in 2023

   ii. 250 MW bilateral power purchase from Manitoba Hydro starting 2020

c. New generation resources added post the long-term action plan for the purpose of ensuring resource adequacy beyond the Company's current resource plan (2028-2034)

   i. New 54 MW Wartsilla generator in 2031

Externalities, Pricing and Wholesale Market

1. The base case forecasts utilized for emission externality values, natural gas prices, market energy prices, and market capacity prices over the study period:[1]

   a. The base forecast utilized the Metropolitan Fringe externality values from the State Externality Docket published on June 13, 2012, under Docket Nos. E999/CI-93-583 and E999/CI-00-1636. The mid-point of the externality values is utilized in the Base Case for the 2013 Plan. These value ranges are approximate representations of what is in the Strategist database.

      i. Carbon externality cost range: $2.50/ton in 2013 to $3.50/ton in 2027

      ii. Oxides of nitrogen ("NO_x") externality cost range: $300/ton in 2013 to $400/ton in 2027

      iii. Particulate matter ("PM_{10}") externality cost range : $3,500/ton in 2013 to $4,800/ton in 2027

      iv. Carbon monoxide ("CO") externality cost range: $1.50/ton in 2013 to $2/ton in 2027

      v. Lead ("Pb") externality cost range: $2,600/ton in 2013 to $3,600/ton in 2027

   b. The SO_2 allowance price assumptions utilized in the base forecast.

      i. SO_2 allowance price for Clean Air Interstate Rule ("CAIR") Replacement Group 2: $222/ton in 2018 to $13/ton in 2024

      ii. This assumption was not included in the base forecast in the 2013 Plan.

   c. Natural Gas forecast assumptions utilized in the base forecast.

      i. Natural Gas at Henry Hub: $4/MMBtu in 2013 to $6/MMBtu in 2027

      ii. Natural gas supply prices reflect the projected spot market at Henry Hub. In addition a regional delivery charge of $0.41/MMBtu for the fuel supply of all new gas generation alternatives is included in the petition

[1] Values are in nominal dollars.

including the natural gas fuel switch at LEC. The delivery charges were escalated at 2.2% annually after 2013.

iii. The firm delivery component of intermediate natural gas resources like the combined cycle was incorporated into the fixed cost revenue requirement for the asset.

d. Delivered Coal price forecast assumptions utilized in the base forecast represent the attributes of each of Minnesota Power's facilities and include:

[TRADE SECRET DATA EXCISED]

e. Wholesale Market Capacity (approximate): $200/MW-month in 2013 to $10,400/MW-month in 2027. Wholesale market capacity was made available up to a maximum of 50 MW for the model during all study years.

f. Wholesale Market Energy (approximate): $28/MWh in 2013 to $55/MWh in 2027. Additional implementation detail provided in item 3.

g. The base forecast for energy prices assumed no cost related to the regulation of carbon dioxide ("CO_2") emissions.

2. The base case energy market interaction structure for Minnesota Power's analysis assumed that the wholesale market was available throughout the study period. The wholesale energy market structure in the modeling represents the day-ahead interaction with the Midcontinent Independent System Operator ("MISO") regional market and helps utilities optimize power supply for customers. A sensitivity called 'Without Market' was developed that assumed the wholesale energy market was unavailable as a power supply resource long term (five years beyond study start date). The sensitivity was included to understand the impact to the planning analysis when the availability of the regional wholesale energy market is removed. A more detailed description of each market interaction structure is provided below.

a. With Wholesale Energy Market ("With Market") – A conservative approach was taken when creating the wholesale energy market that would be made available as a power supply resource during the study period. While the regional market is a valuable and useful piece of a utility's power supply, it should not be considered an 'endless' resource. To help account for the increased risk and volatility that is present when purchasing incrementally larger amounts of energy from the short term market, an increasing price adder was included based on the level of energy purchased. As the volume of energy purchased from the market increased, so did the price adder. This is referred to as a 'Tiered Energy Market' and includes the following pricing assumptions:

i. 0 to 150 MW at base forecast price

ii. 151 to 300 MW at base forecast price plus $15/MWh premium adder

iii. 301 to 600 MW at base forecast price plus $40/MWh premium adder

iv. Greater than 600 MW at emergency energy price ($250/MWh in 2013 and escalates at 2.2% annually)

b. Without Wholesale Energy Market ("No Market") – For this scenario, the Tiered Energy Market described above was removed starting in 2018 and only emergency energy at $250/MWh in 2012 and escalates at 2.2% annually was made available as a power supply resource. As this scenario did not provide for purchasing energy from the wholesale energy market during hours of generation unit planned and forced outages, the planned outages and forced outages for Minnesota Power's generation resources were removed from the model. Removing these outages prevents the model from burdening the customer with additional resources that are not needed for reliability, which would also increase customer cost and power supply surpluses.

The No Market scenario was included to address stakeholder feedback that identified long-term expansion plan modeling could be done with no energy procured from a regional energy market, such as MISO, effectively cutting the utility off from the region as if the utility is located on an island. While Minnesota Power does not envision a future without an effective and beneficial regional market, it conducts this scenario to help identify the long term resource actions that align under both planning methodologies.

3. The estimated decommissioning cost for Minnesota Power's small coal units for the shutdown scenarios discussed in the 2013 Plan are from a study completed by Burns & McDonnell called 2011 Baseload Diversification Study. These costs, along with the remaining plant balances at each facility, are assumed to be recovered and depreciated for 10 years past the shutdown date. This approach and decommissioning study is included in Section F of this Appendix.

Minnesota Power Resources and Bilateral Power Transactions

Another important component of a utility's power supply are contracted purchases and sales that are conducted within the industry to optimize the power surpluses and deficits that occur due to industry load and supply changes. These transactions are called bilateral transactions and allow Minnesota Power to work with other entities to procure energy and capacity (see Appendix C from the 2013 Plan for a list of Minnesota Power's current bilateral transactions included in the Baseline Scenario).

A bilateral transaction is functionally different than the day-ahead regional energy and capacity markets represented by the MISO tariff construct in that bilateral transactions are typically forward, medium to longer-term contracts with defined pricing terms. Minnesota Power monitors the bilateral power markets to identify opportunities to contract with other entities when it is in the best interest of its customers.

4. The emission rates for the thermal generation units included in Strategist are modeled as tons or pounds per MMBtu of fuel consumed for energy production. The level of effluents emitted per MWh generated will vary depending on the output level of a generation facility. As a generator is dispatched to a lower output level because of economic conditions, the effluents emitted per MWh will increase due to the generator operating at a less optimal level when compared to running at full output. The effluents modeled with emission rates in Strategist are:

    a. Carbon Monoxide
    b. Carbon Dioxide
    c. Lead
    d. Mercury
    e. Nitrogen Oxide
    f. Particulate Matter 10
    g. Sulfur Dioxide

Minnesota Power Load and General Economic Assumptions

1. Customer energy and demand requirements are based on the Moderate Growth Scenario – Expected Case in Minnesota Power's 2013 Annual Electric Utility Forecast Report ("AFR2013"). The energy and demand forecast is based on the AFR2013 econometric modeling results plus customer adjustments for increased energy sales to new customers and transmission losses.

    Using the AFR2013 forecast is a change from the load forecast used in the 2013 Plan, which was Minnesota Power's 2012 Annual Electric Utility Forecast Report forecast.

    Example of the Energy and Demand Calculation:

    The Moderate Growth Scenario from Table C.i. on page 41 of Minnesota Power's AFR2013 is the base forecast for the Petition. Note the annual peak demand for the Summer Season is used for the Peak Demand in the Bison 4 Project evaluation. The values needed to calculate the annual energy sales and annual peak demand is the econometric forecast and the customer adjustments. Below are the values and calculations from Table C.i. of the AFR2013 used to calculate the Annual Energies and Annual Peak Demand used in the Strategist software for the Petition:

    Annual Energies (Minnesota Power Delivered Load) = Econometric + Net Energy Added

    Annual Summer Peak Demand (Minnesota Power Delivered Load) = Econometric Summer Peak Demand + Net Load Added

    Refer to page 39 of the AFR2013 for a description of the Customer Generation Adjustments ("Net Load Added" or "Net Energy Added").

    The transmission losses of 6 percent are added to the Annual Energies to capture the power supply requirements for serving Minnesota Power's customers.

2. Capacity accreditation values for generators are the installed capacity ("ICAP") and are based on MISO's Planning Year 4 (June 2012 thru May 2013) generation performance test results per the Module E Resource Adequacy program.

3. Planning reserve margin is based on MISO's required reserve margin of 11.32% based on its 2012 Loss of Load Expectation study and installed generating capability and projected energy demand in the MISO region.

4. The utility discount rate is the weighted average cost of capital for Minnesota Power based on current capital structure and allowed return on equity. The utilized discount rate is 8.18%.

5. General escalation rate of 2.2% was utilized, except for capital cost and operation and maintenance ("O&M") for new generation which is escalated at 3% per year.

B. New Asset Resources Included in the Baseline Scenario Power Supply

The capital costs for the new resource alternatives included in the 2013 Plan's short-term and long-term action plans that form the Base Case for the Baseline Scenario Power Supply were developed using Minnesota Power's most current planning estimates for such resources. The estimates are high level engineering projections and typically have a minimum of +/- 30% range of accuracy.

1. Partial ownership share of 408 MW (approximate) natural gas 1x1 combined cycle natural gas facility

    a. Estimated capital build cost plus a transmission upgrade cost in 2013 dollars is

[TRADE SECRET DATA EXCISED]

2. 55 MW (approximate) natural gas reciprocating engines (6 x 9.2MW engines)

    a. Estimated capital build costs in 2013 dollars is

[TRADE SECRET DATA EXCISED]

C. Sensitivity Analysis Results

The Minnesota Power customer power supply with and without the Bison 4 Project were put through a series of sensitivities that stressed the main drivers for resource decisions including fuel, capital and carbon sensitivities. The sensitivities help determine whether the Bison 4 Project would be the best option for customers if these drivers were to vary from the current baseline scenario outlooks. Table 1 demonstrates that adding the Bison 4 Project to the customer power supply provided the lowest cost power supply in all of the sensitivities considered.

Table 1 – 2013 NPV of Bison 4 with Sensitivities ($ millions)

#	Sensitivities	Case A: Baseline	Case B: Baseline + Bison 4	Delta (Case B - Case A)
0	Base Assumption	$8,082	**$7,964**	**($118)**
1	CO2 Penalty $9/ton	$8,607	**$8,452**	**($156)**
2	CO2 Penalty $21.50/ton	$9,573	**$9,355**	**($218)**
3	CO2 Penalty $34/ton	$10,518	**$10,232**	**($286)**
4	Low Coal Forecast (-30%)	$7,439	**$7,330**	**($109)**
5	High Coal Forecast (+30%)	$8,699	**$8,569**	**($130)**
6	Low Biomass (-10%)	$8,072	**$7,955**	**($118)**
7	High Biomass (+10%)	$8,091	**$7,973**	**($118)**
8	Lower Natural Gas (-50%)	$7,828	**$7,717**	**($110)**
9	Low Natural Gas (-25%)	$7,958	**$7,847**	**($112)**
10	High Natural Gas (+25%)	$8,188	**$8,065**	**($123)**
11	Higher Natural Gas (+50%)	$8,286	**$8,158**	**($128)**
12	Low Externality Values	$7,846	**$7,732**	**($114)**
13	High Externality Values	$8,318	**$8,196**	**($122)**
14	Low Wholesale Market (-50%)	$7,643	**$7,610**	**($32)**
15	High Wholesale Market (+50%)	$8,391	**$8,149**	**($242)**
16	No Wholesale Market	$8,322	**$8,027**	**($295)**
17	No Wholesale Mkt w/CO2 Penalty $21.50/ton	$9,839	**$9,457**	**($383)**
Least Cost Count		**Zero plans**	**18 plans**	**N/A**

The following variables were stressed low and high in the single variable sensitivity analysis shown in Table1.

1. Wholesale market energy
   a. A low sensitivity representing a decrease of 50% from base:

      [TRADE SECRET DATA EXCISED]

   b. A high sensitivity representing an increase of 50% from base:

      [TRADE SECRET DATA EXCISED]

2. Natural gas price forecast at Henry Hub
   a. A low sensitivity representing a decrease of 50% from base:

      [TRADE SECRET DATA EXCISED]

   b. A low sensitivity representing a decrease of 25% from base:

      [TRADE SECRET DATA EXCISED]

   c. A high sensitivity representing an increase of 25% from base:

      [TRADE SECRET DATA EXCISED]

   d. A high sensitivity representing an increase of 50% from base:

      [TRADE SECRET DATA EXCISED]

3. Carbon regulation penalty costs[2]

The evaluation of several carbon regulation levels gives insight into the customer impact of these potential carbon regulation prices; however, in Minnesota Power's opinion these costs should not directly impact long term resource decisions until regulation has been defined and approved for implementation. The carbon regulation values for the sensitivities are from the 2012 Order Establishing 2012 Estimate of Future Carbon Dioxide Regulation Costs, pursuant to Minn. Stat. § 216H.06,in Docket No. E-999/CI-07-1199.

a. A sensitivity based on the low carbon regulation value ranging from $9/ton starting in 2017 to $11/ton in 2027.

b. A sensitivity based on the mid carbon regulation value ranging from $21.50/ton starting in 2017 to $27/ton in 2027.

c. A high sensitivity based on the high carbon regulation value ranging from $34/ton starting in 2017 to $42/ton in 2027.

4. Externality costs

The values for SO_2, PM_{10}, CO, NO_x, Pb, and CO_2 were stressed to the low and high levels indicated in the Metropolitan Fringe from the State Externality Docket, Docket Nos. E-999/CI-93-583 and E-999/CI-00-1636.

5. Coal fuel prices

a. The low sensitivity reduced coal prices by approximately 30% from base.

b. The high sensitivity increased coal prices by approximately 30% from base.

6. Biomass fuel prices

a. The low sensitivity reduced biomass prices by approximately 10% from base.

b. The high sensitivity increased biomass prices by approximately 10% from base.

D. Other changes made in the Bison 4 Project Model

Here are the specific changes made to the Base Case assumptions from the 2013 Plan to the Bison 4 Project.

1. To align with the energy sales forecast assumptions in AFR 2013, moving Rapids Energy Center ("Rapids") to the regulated side of business is assumed to occur January 1, 2014. The 2013 Plan assumed Rapids would be moved to regulated in April 1, 2013.

2. The Rapids biomass expansion assumed to occur in January 2015 in the 2013 Plan was removed in the Bison 4 Project evaluation based on the current status of Rapids project.

3. **[TRADE SECRET DATA EXCISED]**

[2] All carbon regulation penalty costs reflect dollars per ton.

EXHIBIT 1

PUBLIC DOCUMENT
TRADE SECRET DATA EXCISED

Sedway Consulting, Inc.

INDEPENDENT EVALUATION REPORT FOR MINNESOTA POWER COMPANY'S 2013 WIND RESOURCE SOLICITATION

Submitted by:

Alan S. Taylor
Sedway Consulting, Inc.
Boulder, Colorado

May 31, 2013

Introduction and Background

On March 4, 2013, Minnesota Power Company (MP) issued a Resource Request for up to 225 MW of power supplies from wind projects that could help the utility meet its Renewable Energy Standard (RES) goal of having 25% of its sales supplied by renewable resources by 2025. Sedway Consulting, Inc. (Sedway Consulting) was retained by MP to oversee this solicitation for new wind resources and provide an independent evaluation of all proposed alternatives (i.e., all bids received, including a self-build alternative that MP intended to submit). This report provides an assessment of MP's wind resource solicitation from the initial phase of the solicitation (i.e., the issuance of the Resource Request) through the determination and selection of the least-cost wind resource for MP's customers.

Sedway Consulting undertook the following tasks as part of this engagement:

- Reviewed and commented on the Resource Request document before the solicitation was launched,
- Participated in calls/meetings with MP to discuss the separation of bidding and evaluation functions at MP,
- Participated in MP planning calls/meetings to establish the screening procedures and evaluation methodologies that would be employed by MP and Sedway Consulting in their separate review and evaluation of all proposals,
- Acquired and archived all important evaluation parameters and market price assumptions prior to bid opening, for use in Sedway Consulting's proprietary evaluation model,
- Participated on-site at the bid opening, retrieving an electronic copy of each submitted proposal (including MP's self-build Bison 4 proposal),
- Independently reviewed all proposals and compiled levelized contract prices for preliminary ranking of proposals,
- Reviewed and checked MP's revenue requirements calculations for its self-build Bison 4 project, using Sedway Consulting's proprietary revenue requirements model,
- Participated in MP calls/meetings to discuss proposal review results and transmission issues,
- Performed a full financial evaluation of top-ranked proposals.

Sedway Consulting was provided access to all necessary materials and meetings and was able to parallel MP's levelized price analysis and perform its own evaluation of top-ranked proposals. Sedway Consulting reviewed MP's Resource Request, evaluation processes, modeling methodologies, revenue requirement assumptions, communications

with bidders, and evaluation results. Sedway Consulting performed its own evaluation of proposals and joined in periodic calls/meetings to discuss proposal clarification, disqualification, and evaluation decisions.

Overview of Conclusions

Sedway Consulting concluded that MP's self-build Bison 4 wind project was substantially more cost-effective than any of the proposed projects received in the utility's 2013 wind resource solicitation. Sedway Consulting concludes that MP made the appropriate selection and rejection decisions in its solicitation.

This Independent Evaluation Report has a confidential appendix that includes a description of each proposal and an overview of the evaluation results and sensitivity analyses. This material is being afforded confidential treatment to protect participants from having their project pricing and operational information provided to their competitors. Also, MP's customers could be harmed if too much information was made publicly available, allowing some participants to game future solicitations rather than delivering the best renewable projects at the lowest possible prices.

Design of MP's Evaluation and Selection Process

Prior to the opening of proposals, Sedway Consulting reviewed MP's evaluation materials and conducted interviews and email exchanges with MP's evaluation personnel to learn about and incorporate MP's latest market price forecasts into Sedway Consulting's evaluation process. Sedway Consulting requested MP to provide as much information as possible prior to the receipt of proposals. This, in essence, allowed Sedway Consulting to lock down and archive the basic evaluation parameters for the process. Such information included capacity valuation assumptions, cost of capital components, discount rate, revenue requirement assumptions, and forecasts of regional market energy and capacity prices. These assumptions were incorporated into Sedway Consulting's own evaluation model and formed the basis for independently assessing the benefits and costs of top-ranked resources that were bid into MP's solicitation.

Description of Evaluation Process

The initial stage of the evaluation process entailed a general review of all proposals and the calculation and ranking of levelized energy prices for all proposed options. In instances where bidders provided multiple proposal options for a single facility (e.g., different capacities, flat versus escalating pricing, etc.), the option with the lowest levelized price was included in the master ranking. The evaluation team then focused on the top ten facilities. Where top-ranked proposals were found to be non-compliant or incomplete, bidders were notified and given an opportunity to supplement their proposal materials. Sedway Consulting then performed detailed modeling of top-ranked bids to determine their net market value. Although the levelized price ranking was likely to

provide a good approximation of how project economics might compare, an assessment of generation profiles and the energy and capacity benefits of top-ranked projects would ensure that a comprehensive comparison of the most competitive proposals was performed. It was recognized that this detailed modeling effort would not be necessary for proposals that were clearly uncompetitive, but it was decided that Sedway Consulting would perform a market valuation analysis for the top-ranked bids – i.e., those that were within a reasonable $/MWh range of the lowest-price bid.

Transmission plans for the top-ranked bids would be reviewed by an MP transmission expert. In instances where such plans did not include all costs for delivering energy to MP's system, an initial transmission adder would be estimated.

Receipt and Evaluation of Proposals

On April 2, 2013, MP received a significant number of proposals in its wind resource solicitation. A member of Sedway Consulting's IE team was in attendance, conducted the bid opening, and retrieved electronic versions for the IE team's analysis. Both MP and Sedway Consulting performed their analyses of the submitted proposals during April 2013, periodically discussing proposal deficiencies and requests to specific bidders for supplemental information.

The results of MP's and Sedway Consulting's levelized price evaluations were reviewed and discussed in several internal meetings leading up to recommended selection and rejection decisions in mid-April. Sedway Consulting's levelized price ranking was identical to MP's and supported the same decisions regarding which proposals warranted more detailed analysis.

Description of Sedway Consulting's Detailed Evaluation Process

The full financial evaluation entailed modeling the top-ranked bids in Sedway Consulting's Renewable Bid Evaluation Model (RBEM) – a spreadsheet-based tool that determined a proposal's net market value by calculating the present value of a proposed facility's hourly energy benefits and annual capacity benefits and subtracting the present value of the project's costs. Energy benefits were the product of the expected hourly generation of a facility and a forecast of hourly $/MWh energy market prices over the term of the contract. The capacity benefits were calculated as **[TRADE SECRET DATA EXCISED**[1]**]** and an annual forward curve of expected $/kW-year capacity value. The costs in the market value calculation include contract payments for delivered energy,

[1] In practice, a facility's firm capacity value will be determined by MISO rules and will depend on the facility's operations during certain peak hours; **[TRADE SECRET DATA EXCISED]** of a facility's nameplate capacity was adopted by the evaluation team as a reasonable and consistent approximation that was uniformly applied to all evaluated projects.

an imputed debt cost[2] for power purchase agreements (PPA), and transmission costs (if applicable).

[TRADE SECRET DATA EXCISED] Also, the federal renewable Production Tax Credit (PTC) for wind projects will expire for any facilities that are not under construction by December 31, 2013. The extension of that PTC is in question, given the federal government's budget deficits. Thus, many developers are probably eager to commence construction on wind projects as fast as possible, even at low prices. **[TRADE SECRET DATA EXCISED]**

In Sedway Consulting's analysis, virtually all projects were assumed to commence operations at the very beginning of 2015.[3] This ensured consistency of evaluation and allowed for more straightforward calendar-year calculations.

The response to MP's 2013 wind resource solicitation was quite robust: over 30 project proposals[4] were submitted. A summary of the projects is depicted in Table A-1 in Confidential Appendix A, ranked in ascending order by levelized price. The lowest-price project was MP's Bison 4 project. Under base case assumptions, the levelized price of the next lowest-priced proposal was found to be **[TRADE SECRET DATA EXCISED]** more than the levelized price of MP's Bison 4 project.

As noted above, Sedway Consulting performed a detailed analysis of the best ten projects from the levelized price ranking. The results of Sedway Consulting's analysis of these top-ranked proposals are depicted in Table A-2 in Confidential Appendix A. The table includes each PPA/project's expected capacity, proposed duration, the $/MWh net market value, the levelized $/MWh components of that net market value, and the difference between each project's net market value and MP's Bison 4 net market value. Under base case assumptions and with the preliminary transmission adders, Table A-2 shows that MP's Bison 4 project had the highest net market value by **[TRADE SECRET DATA EXCISED]** relative to any of the top-ranked proposals.

Shortlisting of Proposals

On April 16, 2013, after discussing the evaluation results with Sedway Consulting, MP decided to shortlist most of the top 10 projects. Requests were sent to shortlisted bidders for additional details on their transmission and delivery plans. **[TRADE SECRET DATA EXCISED]**

Final Evaluation of Shortlisted Proposals

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[2] Imputed debt (or debt equivalence) costs are associated with a rebalancing of a utility's debt and equity ratios in light of credit rating agencies' policies that view PPAs as being partially equivalent to debt obligations.

[3] **[TRADE SECRET DATA EXCISED]**

[4] Many of these project proposals included mutually-exclusive options (e.g., flat versus escalating pricing, different capacities); thus, there were many more distinct proposals.

In the final evaluation of shortlisted proposals, MP reviewed the transmission and delivery information from shortlisted bidders and updated the transmission adders. In addition, Sedway Consulting performed several sensitivity analyses to explore how the ranking of the shortlisted projects might change under varying assumptions. Specifically, Sedway Consulting examined four scenarios that were specific to the Bison 4 project and two broader sensitivities that were applicable to all of the bids. **[TRADE SECRET DATA EXCISED]**

The results of the final evaluation of the shortlisted bids are depicted in Table A-3 in Confidential Appendix A. The table includes all of the same information as for Table A-2, **[TRADE SECRET DATA EXCISED]** and two net market value differentials – one reflecting the difference between each project's net market value and MP's Bison 4 base case net market value, **[TRADE SECRET DATA EXCISED]** Table A-3 shows that MP's Bison 4 project's net market value **[TRADE SECRET DATA EXCISED]**

Additional Sensitivities

In another Bison 4 scenario, Sedway Consulting truncated the annual revenue requirement pattern of both the base case and tax-delay scenarios, eliminating all costs and benefits associated with the project after 25 years, even though the expected economic life of the Bison 4 project is 35 years. Sedway Consulting performed this analysis to better align the terms of the competing options. Although all bidders were given the flexibility to propose PPAs of 20 years duration or more (up to the economic life of their project), **[TRADE SECRET DATA EXCISED]**

Table A-4 in this report's Confidential Appendix A presents the results of Sedway Consulting's sensitivity analyses. **[TRADE SECRET DATA EXCISED]**

Sedway Consulting's detailed analysis concluded that MP's Bison 4 project was the most economical alternative from the utility's wind solicitation. Sedway Consulting concurred with MP's decision to move ahead with the Bison 4 project. The proposals received in the solicitation had prices that were too high to make them competitive with MP's Bison 4 project, as described further in Confidential Appendix A.

Conclusion

Sedway Consulting was provided access to all necessary materials and meetings and was able to parallel MP's levelized price ranking process and perform its own detailed evaluation of the top-ranked proposals.

Sedway Consulting monitored the back-and-forth email traffic between MP and the wind resource bidders and believes that MP treated all bidders consistently and fairly.

Sedway Consulting believes that MP selected the most economic wind project for meeting its RES requirements. **[TRADE SECRET DATA EXCISED]**

CONFIDENTIAL
Appendix A
Offer Description and Economic Evaluation Results

Table A-1 presents a summary of the proposals that were received in MP's 2013 wind resource solicitation. **[TRADE SECRET DATA EXCISED]** The offers and results in the tables in this appendix reflect only the best (lowest levelized price) offer submitted for each specific project.

For each bidder/project offer, Table A-1 presents:

- project capacity,
- project location,
- whether or not the project was a C-BED project,
- length (in years) of the proposed PPA, and
- levelized bid price (in $/MWh).

For those proposals in which the offered pricing was flat, then the levelized price is that flat price, by definition. Some bidders offered escalating prices; the depicted values in Table A-1 for those proposals have been converted into a levelized price based on MP's **[TRADE SECRET DATA EXCISED]** discount rate. The table is ranked by proposed contract price in ascending order. It is important to note that some bidders did not include all costs associated with the delivery of their project's energy to the MP.MP load node, as required in MP's Resource Request. Thus, it was decided to focus detailed economic and transmission evaluation efforts on the top 10 projects – roughly the top third of bids received – to ensure a sufficiently broad examination. It was recognized that if lower-ranked projects had not included appropriate transmission costs, such inclusion would only make them less competitive. The top 10 projects are shaded in Table A-1.

MP's Bison 4 project had the lowest levelized price. **[TRADE SECRET DATA**[1] **EXCISED]**

[1] **[TRADE SECRET DATA EXCISED]**

Table A-1
MP 2013 Wind Resource Solicitation
Summary of Received Proposals

Participant/Project	**Capacity** *(MW)*	**Location**	**C-BED** (Y/N)	**Term** (Years)	**Bid Price** *($/MWh)*
		[TRADE SECRET DATA EXCISED			
Minnesota Power Bison 4	208	Oliver County, ND	N	35	

TRADE SECRET EXCISED]

As part of the evaluation of the top 10 projects, MP reviewed each proposal's transmission and energy delivery plan. For those projects where the bidder did not propose a point of delivery at the MP.MP load node, MP estimated the likely $/MWh costs of transmission. Sedway Consulting was not in a position to independently determine the appropriateness of these transmission adders.

The results in Table A-2 reflect Sedway Consulting's detailed analysis of the top 10 proposals. For each project, the table depicts:

1. *Capacity:* Nominal capacity of the Project.
2. *Term:* Proposed term or life of the Project.
3. *Bid Price:* Proposed price of the Project - levelized cost in $/MWh over the life of the project.
4. *Debt Equivalence Adjustment:* The cost to MP of having to add additional equity to offset the debt of a long-term PPA to maintain MP's debt-to-equity balance.
5. *Initial Transmission Adjustment:* The estimated additional cost associated with delivery of a project's energy to the MP.MP load node if such delivery was not included in the bid price. **[TRADE SECRET DATA EXCISED]**
6. *Total Project Cost (A):* The cost of each project in levelized $/MWh after debt equivalence and initial transmission adjustments.
7. *Energy Value of Project (B):* The energy value of each project in levelized $/MWh based on a project's expected hourly energy production and the long-term market energy price forecast for MP's region. A higher number means the project produces energy over more valuable hours in the market.
8. *Capacity Value of Project (C):* The capacity value of each project in levelized $/MWh based on the expected MISO capacity attribution for a project **[TRADE SECRET DATA EXCISED]** and the long-term market capacity price forecast for MP's region.
9. *Net Market Value of Project:* The overall levelized $/MWh market value of a project, with the higher positive numbers being better (having the most net value in the market). Projects are ranked based on their overall net market value.
10. *Difference in Net Market Value relative to MP's Bison 4 Project:* The differential in levelized $/MWh net market value between the best project (MP's Bison 4 project) and each of the other projects.

On April 16, 2013, MP and Sedway Consulting discussed the detailed evaluation results of the top 10 proposals and decided to shortlist the top seven projects – which are reflected in the shaded portion of the Bidder/Project column. As described in the main report, additional transmission and delivery plan information was requested from these bidders and a more detailed transmission adder was developed from this information. The final ranking of the shortlisted projects is shown in Table A-3, **[TRADE SECRET DATA EXCISED]**

Table A-4 depicts the net market value results and differentials associated with the three sensitivity analyses described in the main report.

Table A-2
Sedway Consulting Net Market Value Preliminary Results
Top-Ranked Proposals in MP's 2013 Wind Resource Solicitation

			Levelized Values ($/MWh)							
Bidder/Project	**Capacity (MW)**	**Term (years)**	**Bid Price**	**Debt Equivalence Adjustment**	**Initial Transmission Adjustment**	**Total Project Cost (A)**	**Project Energy Value (B)**	**Project Capacity Value (C)**	**Project Net Market Value [(B + C) - A]**	**Difference relative to best Net Market Value**
			[TRADE SECRET DATA EXCISED							
Minnesota Power – Bison 4	208	35								

Table A-3
Sedway Consulting Net Market Value Final Results
Shortlisted Proposals in MP's 2013 Wind Resource Solicitation

			Levelized Values ($/MWh)								
Bidder/Project	**Capacity (MW)**	**Term (years)**	**Bid Price**	**Debt Equivalence Adjustment**	**Final Transmission Adjustment**	**Total Project Cost (A)**	**Project Energy Value (B)**	**Project Capacity Value (C)**	**Project Net Market Value [(B + C) - A]**	**Difference relative to Bison 4**	**Difference relative to Bison 4 (tax delay)**
Minnesota Power – Bison 4	208	35	**[TRADE SECRET DATA EXCISED]**								

Table A-4
Sedway Consulting Net Market Value Final Sensitivity Results
Shortlisted Proposals in MP's 2013 Wind Resource Solicitation

		Sensitivities – Levelized Values ($/MWh)								
[TRADE SECRET DATA EXCISED]		25-year Truncation			35-Year REC Extension			No Later-Years Market Price Escalation		
Bidder/Project	Capacity (MW)	Project Net Market Value	Difference relative to Bison 4		Project Net Market Value	Difference relative to Bison 4		Project Net Market Value	Difference relative to Bison 4	
Minnesota Power – Bison 4	208									

TRADE SECRET DATA EXCISED]

STATE OF MINNESOTA	)	AFFIDAVIT OF SERVICE VIA
	) ss	ELECTRONIC FILING
COUNTY OF ST. LOUIS	)	

Kristie Lindstrom of the City of Duluth, County of St. Louis, State of Minnesota, says that on the 27th day of September, 2013, she served Minnesota Power's Petition for Approval of Investments and Expenditures in the Bison 4 Wind Project to the Minnesota Public Utilities Commission and the Energy Resources Division of the Minnesota Department of Commerce via electronic filing. The remaining parties on the attached service list were served the Summary as so indicated on the list.

/s/ Kristie Lindstrom

Subscribed and sworn to before
me this 27th day of September, 2013.

/s/ Jill Helmer

Notary Public - Minnesota
My Commission Expires Jan. 31, 2018

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Christopher	Anderson	canderson@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022191	Electronic Service	Yes	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	Yes	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 500 Saint Paul, MN 551012198	Electronic Service	Yes	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Elizabeth	Goodpaster	bgoodpaster@mncenter.org	MN Center for Environmental Advocacy	Suite 206 26 East Exchange Street St. Paul, MN 551011667	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Burl W.	Haar	burl.haar@state.mn.us	Public Utilities Commission	Suite 350 121 7th Place East St. Paul, MN 551012147	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Margaret	Hodnik	mhodnik@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Lori	Hoyum	lhoyum@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Michael	Krikava	mkrikava@briggs.com	Briggs And Morgan, P.A.	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
James D.	Larson	james.larson@avantenergy.com	Avant Energy Services	220 S 6th St Ste 1300 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
John	Lindell	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	Yes	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Susan	Ludwig	sludwig@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Paper Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	Yes	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Andrew	Moratzka	apmoratzka@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Thomas	Scharff	thomas.scharff@newpagecorp.com	New Page Corporation	P.O. Box 8050 610 High Street Wisconsin Rapids, WI 544958050	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Ron	Spangler, Jr.	rlspangler@otpco.com	Otter Tail Power Company	215 So. Cascade St. PO Box 496 Fergus Falls, MN 565380496	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Eric	Swanson	eswanson@winthrop.com	Winthrop Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Karen	Turnboom	karen.turnboom@newpagecorp.com	NewPage Corporation	100 Central Avenue Duluth, MN 55807	Electronic Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List
Laurance R.	Waldoch		Lindquist & Vennum	4200 IDS Center 80 South 8th Street Minneapolis, MN 554022274	Paper Service	No	GEN_SL_Minnesota Power_GEN_SL_Minnesota Power_Minnesota Power General Service List