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Direct Testimony and Schedules
Steven W. Wishart

Before the North Dakota Public Service Commission
State of North Dakota

In the Matter of the Application of Northern States Power Company for an Advance Determination of Prudence for the 150 MW Border Winds Project

and

In the Matter of the Application of Northern States Power Company for a Certificate of Public Convenience and Necessity For The 150 MW Border Winds Project

Case Nos. PU-13-___ and PU-13-___
Exhibit ___(SWW-1)

Resource Planning Testimony

August 13, 2013

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Schedules

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND TITLE.

A. My name is Steven W. Wishart. I am Director of Resource Planning and Bidding for Xcel Energy.

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I have worked for Xcel Energy since 2005 in the areas of demand-side management and resource planning. In my current role, I am responsible for the direction and oversight of electric Resource Planning for the five-state integrated Northern States Power Company system (NSP System), which provides electric service to customers in North Dakota, South Dakota, Minnesota, Wisconsin, and Michigan.

My responsibilities include assisting the Company in making reasonable and prudent acquisition decisions for electric generation resources. I maintain our resource planning model, Strategist, and conduct economic evaluations of resource additions and bid processes for new resource acquisitions. My resume is provided as Exhibit___(SWW-1), Schedule 1.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I discuss the proposed addition of the Border Winds Project to the Xcel Energy system, explaining the quantitative and qualitative customer and Company benefits presented in our Application. My testimony also provides:

- A review of the resource selection process; and
- A description of the proposed resource addition:
  - The 150 MW Border Winds Project being developed by RES

Amercias in the northeastern corner of Rolette County, North Dakota, which upon completion RES Americas will transfer to the Company

I conclude my testimony with a discussion of the development and operational risks that the Company identified for this Project, and the steps we have taken to mitigate those risks.

II. PROJECT SELECTION PROCESS

Q. WAS THE BORDER WINDS PROJECT IDENTIFIED BY THE COMPANY THROUGH ITS FEBRUARY 2013 REQUEST FOR PROPOSALS PROCESS?

A. Yes. We initiated the RFP process following the January 2013 extension of the federal Production Tax Credit, believing there would be opportunities to secure wind resources at cost-effective rates because the PTC can offset one-third to one-half of a wind project's total cost. We issued the RFP on February 18, 2013 for proposals of any size up to 200 MW and of various structures including utility ownership, PPA, or any combination thereof with no preference given to any particular type of structure. The RFP generated proposals for 57 projects comprising approximately 6,300 MW of distinct resources. Many projects contained several PPA and ownership options with associated variations in size and price.

As noted in our July 26, 2013 application requesting an advance determination of prudence for the Courtenay, Odell, and Pleasant Valley resource additions, the Company was considering a fourth resource identified in our RFP for wind projects. We explained that we were continuing to have discussions with

RES Americas (the developer of the Pleasant Valley project) regarding a another build and transfer project, which would be located in North Dakota. This was the Border Winds Project.

Q. PLEASE SUMMARIZE HOW THE RFP PROCESS IDENTIFIED THE BORDER WINDS PROJECT.

A. Our Resource Planning department led the team evaluating the bids received in response to our RFP. Copies of proposals with a PPA component were provided to our Purchased Power group for further evaluation, and copies of proposals with an ownership component were delivered to our Business Development group. Proposals containing offers for both PPAs and ownership structures were provided to both groups.

We performed an initial screening of bids based on our calculation of levelized cost. This screening identified the most cost-effective projects for us to focus on. Based on the distribution of levelized cost we focused review on bids that were at or below $29/MWh. We chose the cutoff price of $29/MWh as it provided for a reasonable number of the most cost-effective proposals from which to focus further review efforts. The initial screening process identified 14 projects below the established levelized price threshold, including the Border Winds Project.

Q. HOW WAS BORDER WINDS IDENTIFIED AS A PROJECT WORTH PURSUING FURTHER?

A significant consideration of any project is its ability to interconnect with the transmission system. Therefore, our Transmission Access group performed a detailed multi-factor review of the status of each project's MISO

interconnection request and potential transmission requirements. This review identified potential significant issues around transmission interconnection cost and curtailment risk for several of the projects. Based on this analysis, the Transmission Access group recommended that a number of projects be eliminated from further consideration but that others proceed with further analysis.

The Business Development group used the information provided by the Transmission Access group and other information provided in the bids to determine the potential viability of develop/transfer projects. From this assessment, Business Development identified five projects that appeared attractive from an ownership perspective. These five projects were separated into three tiers to differentiate their relative attractiveness.

The Pleasant Valley project appeared at this point to have characteristics that stood out from the others. A second tier of projects also appeared to be attractive, which included the Border Winds Project. The third tier of projects were of interest, but had characteristics that were less attractive from an ownership perspective. As the result of the analysis, attention was focused on Pleasant Valley and Border Winds proposals by RES Americas, with discussion continuing with one additional developer. The Business Development group proceeded with due diligence and contract negotiations on these recommended projects.

Business Development's detailed due diligence on RES Americas' proposals involved evaluating a number of measures, including price, energy production profile, curtailment risk, interconnection and transmission requirements and

costs, environmental risk, developer experience, and several other criteria. While the Border Winds Project offered attractive pricing and fit with our strategy of having a geographically diverse balance of company-owned and PPA wind resources, our initial analysis of the Project indicated that possible transmission issues had the potential to add significant costs. Given the significant upside of the Project, the Company continued to analyze the transmission issue to determine whether we should proceed with the Border Winds Project.

Q. WHAT DID THE COMPANY'S ANALYSIS OF THE TRANSMISSION ISSUE DETERMINE?

A. While the expected costs for the Project's "transmission interconnection facilities" could be identified and therefore included in the Project's purchase price, MISO studies being conducted this fall and next winter could show that the Project also triggers the need for additional facilities categorized as "transmission network upgrades." Given the deadline for PTC eligibility, the Company could not wait for better transmission information before proceding with the Project and still capture the Project's potential benfits for our customers. The Company therefore negotiated provisions in its purchase and sale agreement ("PSA") with RES America allowing Xcel Energy to terminate the PSA for the Project should transmission costs exceed a limit beyond which, in the Company's sole discretion, the Project's transmission costs are disproportionate to its benefits.

III. PROJECT DESCRIPTION

Q. PLEASE DESCRIBE THE BORDER WINDS PROJECT.

A. The Border Winds project is a 150 MW wind energy generation facility that will be located on 52.5 square miles of land in northeastern Rolette County, North Dakota immediately south of the U.S.-Canadian Border. RES Americas will develop the Border Winds project and upon completion, transfer ownership to Xcel Energy. Xcel Energy will then dissolve the project entity and own and operate Border Winds.

The Border Winds project will consist of **[TRADE SECRET BEGINS** **TRADE SECRET ENDS]** wind turbine generators. Associated infrastructure includes access roads, electrical collection system, meteorological monitoring stations, a project collector substation, a new interconnection substation and an operations and maintenance facility. An analysis of the site-specific wind data was conducted by our consultant, V-Bar, utilizing the specific turbines planned for the project. The analysis predicted a net capacity factor of 45.51 percent for the wind turbines, which was used for our final levelized-cost analysis.

The Border Winds Project will interconnect at a new 230 kV substation on Xcel Energy's Rugby to Glenboro 230 kV line. A less than one-mile 230 kV line will connect the wind farm's collector substation to the point of interconnection. The Project has applied for and will participate in MISO's August 2013 Generator Interconnection Study cycle, which will identify all required transmission upgrades required for the project to interconnect to the transmission grid.

Q. WHAT IS THE PROJECT'S CONSTRUCTION SCHEDULE?

A. Construction is expected to begin in late 2013. The current project schedule

contemplates commercial operation in late 2015.

Q. PLEASE DESCRIBE HOW XCEL ENERGY WILL ACQUIRE THE BORDER WINDS PROJECT FROM RES AMERICAS.

A. Just as was done with Pleasant Valley, the Company has agreed to structure the transaction as a purchase of an LLC to allow RES Americas some flexibility in development of the project, to create efficiencies in the mechanics of the project transfer by taking advantage of certain legal merger constructs, and to provide certain tax benefits during development. This structure requires RES Americas to assume construction risk throughout the development and construction phase of the project, as they are responsible for the physical construction of the project.

After the closing of the purchase, the Company will dissolve the LLC and reflect the Project assets on its books as if Border Winds were any other Company owned generating facility. Accept for the Pleasant Valley Project, the Company has not engaged in any transactions structured in this way in the past however, our Colorado affiliate, Public Service Company, has recently, and successfully, consummated such a transaction.

Q. WHAT ARE THE TERMS OF THE PSA?

A. The PSA contains usual and customary terms for a transaction of this type, with the condition precedent that the Company must receive an Advance Determination Of Prudence from the Commission before proceeding with the PSA. We have provided the Company's PSA with RES Americas as Attachment A to our Application.

Q. WHAT ARE THE COSTS OF THE BORDER WINDS PROJECT?

A. We estimate the total capital cost of the Border Winds Project will be approximately **[TRADE SECRET BEGINS TRADE SECRET ENDS]**, including Xcel Energy's anticipated development oversight and ownership transfer closing costs. Our PSA with RES Americas calls for payments of approximately **[TRADE SECRET BEGINS TRADE SECRET ENDS]** for development of the Project. We estimate Xcel Energy's development oversight and ownership transfer costs included in the Project's total capital costs will be approximately $4.5 million. The total capital costs reflect **[TRADE SECRET BEGINS TRADE SECRET ENDS]** to be absorbed by RES Americas. If the **[TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS]** exceed that amount, the Company may also be responsible for **[TRADE SECRET DATA BEGINS**

TRADE SECRET DATA ENDS] would trigger the Company's right to terminate the PSA. We calculate the 25-year levelized cost of electricity to be **[TRADE SECRET BEGINS TRADE SECRET ENDS]** based on **[TRADE SECRET BEGINS TRADE SECRET ENDS]** of capital costs and our estimates of O&M.

IV. STRATEGIST ANALYSIS OF PROJECT

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

A. We used the Strategist resource planning model to evaluate the cost effectiveness of the Border Winds Project. The Strategist Planning model

simulates the operation of the NSP System and estimates the total cost of energy over the life of the Project on a present value basis. We use the model to test results under a range of input assumptions. To assess Border Winds' impact on customer costs, we simulated the operation of the NSP System over the next 40 years with and without the addition of the 150 MW of wind generation from the Project.

Wind generation has a zero marginal cost to produce the next unit of energy. In other words, after capital and on-going O&M costs are accounted for, it costs a wind generator nothing to produce the next MWh of energy. As the result, MISO generally provides for wind production ahead of other, higher marginally-priced, generation such as gas- and coal-based generation. Consequently, the more wind on the system and generating, the less traditionally-fired generation is operated. When the energy from the 150 MW Border Winds Project is produced, it displaces a similar need for the Company to either produce the energy elsewhere on its system or purchase energy from the MISO market. The Strategist analysis accounts for these cost savings as well as the impact of the capital commitments associated with the Project.

Q. HOW WAS THE BORDER WINDS PROJECT MODELED IN STRATEGIST?

A. The principal factors in modeling the Project's cost effectiveness were its upfront purchase price, annual generation, and transmission congestion and loss costs. For Company-owned projects, the upfront purchase price must be translated into a projection of annual revenue requirement associated with financing, operations, depreciation, and taxes. Projections of upfront and on-going capital investments and annual operating and maintenance expenses must also be developed.

To create a total annual cost of ownership estimate, we used a spreadsheet model and transferred that annual total cost estimate directly into Strategist. Upfront capital investments are well defined. The on-going capital investments and annual O&M expenses projections are subject to some uncertainty due to unforeseen equipment failures or changing costs within the industry. To test how variation from the base forecasts would impact the overall cost-effectiveness of the project, we conducted sensitivity tests in Strategist of plus and minus 25 percent of projected on-going capital investments and O&M expenses.

Q. HOW WAS THE PROJECT'S ANNUAL GENERATION MODELED?

A. The economic benefit of an owned wind project is highly-dependent on the annual generation from the site. Each additional MWh produced by a Company-owned project increases the value of the project because the higher the production, the lower the average costs will be, and therefore, the larger the benefits. To test how average capacity factors impact the economic value of Border Winds, Strategist modeled this sensitivity using +/- 5 percent of the expected annual generation. The base assumption for the life of each ownership option was 25 years, and sensitivities were performed for 20 year and 30 year lives.

The profile for the Project is based upon Typical Wind Year (TWY) profiles for existing NSP wind farms that are geographically proximate. The profile was adjusted to match the target annual generation.

And in accordance with the latest MISO effective load carrying capability (ELCC) analysis, we modeled Border Winds having a 13.3 percent accredited

capacity value. However, per MISO's tariff and business practices, for the Project to receive accreditation as a capacity resource it must have firm delivery rights either with Network Resource Interconnection Service or firm transmission service (Network Integration Transmission Service or Firm Point-to-Point Transmission Service). Our expectation for Border Winds, as well as our proposed 600 MW wind portfolio, is that these wind resources will not be given this designation until 2021 when various transmission system upgrades, including MISO's MVP projects, are complete. Our modeling efforts reflect the expected capacity accreditation in 2021.

Q. HOW WERE TRANSMISSION CONGESTION AND LINE LOSSES MODELED?

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

Q. WHAT WERE STRATEGIST RESULTS?

A. The Strategist analysis shows that Border Winds will result in net savings for our customers under all sensitivity tests conducted.

Table 1: PVRR Results ($millions)

	Base	Low Gas	30Year Life	20Year Life	+5% Cap. Factor	-5% Cap. Factor	+25% On-Going Costs	-25% On-Going Costs
Base Case	$40,412	$37,235	$40,382	$40,472	$40,395	$40,428	$40,443	$40,407
Border Wind	$40,366	$37,243	$40,309	$40,451	$40,340	$40,393	$40,411	$40,348

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

	Base	Low Gas	30Year Life	20Year Life	+5% Cap. Factor	-5% Cap. Factor	+25% On-Going Costs	-25% On-Going Costs
Base Case	$0	$0	$0	$0	$0	$0	$0	$0
Border Wind	($45)	$8	($74)	($20)	($55)	($35)	($32)	($58)

As indicated in the PVRR tables above, the Border Winds Project provides significant cost savings to our customers even under the conservative sensitivity cases studied. The analysis also indicates that Border Winds can still provide customer benefit with transmission costs totaling up to approximately $50 million.

Q. WERE THE STRATEGIST RESULTS CALCULATED IN TERMS OF LEVELIZED COST?

A. Yes. An alternate way of presenting the Strategist results is by calculating the levelized price of the project and the other costs and benefits associated with it. Levelized prices are a fixed $/MWh price that have the same NPV as the actual cost streams generated by Strategist. In addition to the direct project costs, we included costs for wind integration, transmission congestion, and line losses. While the primary benefit of the project is displaced generation from fossil fuel resources, the Strategist model also tracks benefits from

avoided CO2 emissions and capacity credit. Table 3 below illustrates how the levelized cost of the project is more than offset by the value of avoided generation.

Table 3: Levelized Costs Analysis - $/MWh

	[Trade Secret Begins
Revenue Requirements	
Wind Integration	
Congestion/Line Losses	
Avoided Fossil Fuel	
Capacity Credit	
	Trade Secret Ends]
Net Cost (Benefit)	($7.30)

Q. WERE THERE OTHER ECONOMIC BENEFITS THAT STRATEGIST IDENTIFIED?

A. Yes. In addition to the compelling economic benefits, adding additional wind at favorable pricing provides a hedge against future increases in natural gas prices, market energy costs, and CO_2 regulation. This is primarily because the wind displaces thermal generation or market purchases that are subject to volatility in fuel, power and emissions costs. To illustrate the benefit of the Border Winds Project, Table 4 below shows the base case volumes of natural gas, market purchases and CO_2 emissions – and the deltas against these factors for the project.

Table 4: Hedge Value

Total System 2015-2050	CO2 *Million tons*	Natural Gas *bcf*	Market Purchases *GWh*
BASE	647	2,714	51,545
Border Winds	(8)	(69)	(2,324)

We expect that soon after initial operation customers' overall bills will be lower than otherwise as a result of our proposed resource acquisition. Our Strategist dispatch simulation forecast that the cost of the Border Winds project proposed in this Petition will be more than offset by decreases in the cost of fossil fuel and other purchased energy.

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

A. To develop our rate impact estimates, we used the output of our Strategist model divided by our forecasted sales volume. Table 5 below estimates how average rates will be affected by the proposed wind project.

Table 5: Annual Rate Impact Analysis

	2015	2016	2017	2018	2019	2020
Base Rates - Border Winds	0 02¢/kWh	0 06¢/kWh	0 05¢/kWh	0 04¢/kWh	0 03¢/kWh	0 02¢/kWh
Wind Integration & Congestion	0 00¢/kWh	0 01¢/kWh	0 01¢/kWh	0 01¢/kWh	0 01¢/kWh	0 01¢/kWh
Avoided Fuel & Purchased Power	(0 01¢/kWh)	(0 03¢/kWh)	(0 04¢/kWh)	(0 05¢/kWh)	(0 05¢/kWh)	(0 05¢/kWh)
Net Rate Impact	**0.01¢/kWh**	**0.03¢/kWh**	**0.01¢/kWh**	**0.00¢/kWh**	**(0.02¢/kWh)**	**(0.03¢/kWh)**

	2021	2022	2023	2024	2025
Base Rates - Border Winds	0 01¢/kWh	0 01¢/kWh	0 01¢/kWh	0 00¢/kWh	0 02¢/kWh
Wind Integration & Congestion	0 01¢/kWh	0 01¢/kWh	0 01¢/kWh	0 01¢/kWh	0 01¢/kWh
Avoided Fuel & Purchased Power	(0 05¢/kWh)	(0 06¢/kWh)	(0 06¢/kWh)	(0 06¢/kWh)	(0 07¢/kWh)
Net Rate Impact	**(0.03¢/kWh)**	**(0.04¢/kWh)**	**(0.04¢/kWh)**	**(0.05¢/kWh)**	**(0.04¢/kWh)**

We estimate that the peak rate impact of the Border Winds project will be six one-hundredths of one cent, but then rapidly decline as the project is depreciated. However, the cost impact of this project will be offset by reductions in fuel and purchased energy. These offsets begin at one one-hundredths of one cent, and are forecasted to increase to more than seven one-hundredths of one cent by 2025 – delivering significant cost savings to our customers over the long-term.

V. PROJECT RISK MANAGEMENT

Q. WHAT IS MEANT BY PROJECT RISK MANAGEMENT?

A. With any large generating project, there are risks associated with the development of the Border Winds Project. The two principal categories of risk are development risks and operational risks. Development risks for the Border Winds Project include the risks associated with the federal PTC, construction and capital issues, transmission interconnection, and environmental issues. The operational risks relate to power production and curtailment.

Q. PLEASE DESCRIBE THE FEDERAL PTC RISK.

A. The January 2013 renewal of the PTC provides a tax credit for those projects that have begun construction by December 31, 2013. IRS guidelines consider commencement of construction to have occurred when physical work of a significant nature has started or five percent of the total cost of the facility has been incurred and the developer makes continuous efforts to complete the facility thereafter.

We believe the Border Winds Project will meet the requirements to qualify for the PTC, and that the risk has been reasonably mitigated in the relevant agreements. Under the PSA, RES Americas is required to **[TRADE SECRET BEGINS**

TRADE SECRET ENDS].

The PSA also contains extensive provisions **[TRADE SECRET BEGINS**

TRADE SECRET ENDS].

Q. WHAT ARE THE CONSTRUCTION AND CAPITAL RISKS?

A. The Company will carry some construction and out-year capital contribution risks for the Border Winds Project since we will own it. We believe the PSA with RES Americas is equitable, and reasonably shifts the bulk of these risks on the developer. For example, by purchasing a turnkey project, the Company mitigates its actual construction risk since RES Americas must construct the project prior to the Company purchasing it. Additionally, we have required RES Americas, through the PSA, to meet our technical criteria for Company-owned facilities.

The parties have negotiated a customary holdback provision to provide for the completion of certain items after the closing, which is based on

[TRADE SECRET BEGINS

TRADE SECRET ENDS] as determined at closing.

Q. WHAT ARE THE PRINCIPAL RISKS THE COMPANY ASSUMES UPON ACQUIRING THE PROJECT FROM RES AMERICAS?

A. The Company will assume all of the contracts that RES Americas has entered into for the Project, including leases, and must conform to the terms of those contracts, which could affect the total capital cost of the Project. The Company will also be responsible for any other capital costs that may arise during our ownership of the project. We believe that we have made reasonable efforts to mitigate these potential risks.

We also require that all contracts RES Americas enters into for the project are satisfactory to the Company. We have also confirmed that payments for land rights associated with the project are in the form of ongoing annual lease payments properly treated as O&M expenditures and not capital development costs. Last, we believe that our prudent operation and maintenance of the project will mitigate significant out-year capital contributions.

Q. ARE THE COSTS OF THESE RISKS REFLECTED IN THE PURCHASE PRICE FOR THE PROJECT?

A. Yes. The purchase price we have negotiated with RES Americas reflects the risks that RES Americas is taking on fully, those risks that they share with the Company, and those risks that the Company will carry. To ensure that the developer delivers the quality of project bargained for, the Company will incur certain oversight costs during development, as well as closing costs associated

with the transfer of the project to the company. Our analysis of the Project reflects an additional assumption of potential capital costs over-and-above the purchase price to account for our costs and a contingency for potential additional transmission.

Q. PLEASE DESCRIBE THE TRANSMISSION INTERCONNECTION RISK.

A. Uncertain transmission network upgrade costs are the largest development risk we have identified. RES Americas incorporated the expected costs for "transmission interconnection" facilities into the purchase price, but MISO studies being conducted this fall and coming winter may show that the Project triggers the need for additional "transmission network upgrades." Preliminary work indicates that the Project might trigger the need for improvements to the Grand Forks-to-Winnipeg 500 kV line, however the results are very sensitive to modeling input assumptions. If needed, the transmission network upgrades could be on the order of $50 million. Our Strategist modeling shows the potential for customer benefit up to about the $50 million network upgrade level, and an $80 million benefit if potential for carbon emission costs are included.

In light of this, we have negotiated contract provisions that allow us to terminate the development of the Project at various stages in the MISO interconnection process if it becomes apparent that transmission costs are too high. This allows Xcel Energy to take a very conservative approach to whether or not to proceed with the Project.

Q. AT WHAT POINTS IN THE MISO INTERCONNECTION PROCESS MAY THE COMPANY TERMINATE THE PSA BASED ON EXCESSIVE TRANSMISSION COSTS?

A. The Company has three opportunities under the PSA to assess the transmission costs associated with the Project, based on the following:

- Preliminary and nonbinding results of a System Impact Study of the Project, which are anticipated to be available from MISO in November 2013.
- A Facility Study of the necessary network upgrades for the Project (identified in the System Impact Study), which is expected to be completed in the 2nd Quarter of 2014.
- The Interconnection Agreement negotiations for the Project, which are anticipated to be held in the 3rd Quarter of 2013. In the event the Company terminates the PSA based on the final transmission costs in the IA, it must pay RES Americas a break-up fee of **[TRADE SECRET BEGINS TRADE SECRET ENDS]** This breakup fee recognizes that delaying the final decision whether to proceed until mid-2014 creates real costs for the developer.

Q. WHAT ARE THE ENVIRONMENTAL RISKS FOR THE PROJECT?

A. RES Americas will obtain avian and bat surveys for the Border Winds Project to determine if there will be significant impacts to avian and bat species from the development, construction, commissioning and operation of the Project. RES Americas will also work with the U.S. Fish and Wildlife Service and other applicable authorities to develop an avian and bat projection plan to avoid and minimize possible adverse effects to avian and bat species. **[TRADE SECRET BEGINS**

TRADE SECRET ENDS]

Q. WHAT ARE THE POWER PRODUCTION AND CURTAILMENT RISKS FOR THE PROJECT?

A. Because the Company owns it, the operational risks associated with Border Winds remain with the Company. However these risks are offset by the higher estimated benefits that flow from Company ownership. To the extent that annual generation at Border Winds is lower than expected, we would lose energy at no significant change in cost, and the overall cost-effectiveness of the Project would decrease. Conversely, if annual generation is greater than expected, the customer benefits from the Project would increase. Owned projects also have some uncertainty in annual costs for operation and maintenance.

In each of these areas, we have included in our project evaluation conservative estimates of the expected on-going costs at Border Winds. As noted previously, curtailment estimates are an order of magnitude higher than have been recently experienced. Capacity factor assumptions are lower than the vendor relied-on, and sensitivity tests with even lower capacity factors still identify substantial cost savings can be had for customers. I discuss both of these potential operating risks in my testimony regarding the Strategist analysis of the project.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

Steven W. Wishart Jr.

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EXPERIENCE

Xcel Energy, Minneapolis MN, Denver CO 5/12-Current
Director – Resource Planning & Bidding

Xcel Energy, Minneapolis MN, Denver CO 4/06-05/12
Manager / Sr. Analyst / Analyst – Strategic Analytics

Responsibilities:

- Oversee economic evaluation of large power supply projects for Xcel Energy.
- Prepare analysis for senior leadership that reports on expected value and value at risk for new generation assets, power purchases, conservation programs, wholesale sales, and other projects.
- Maintain complex model of the three Xcel Energy power systems for use in, project evaluation, rate forecasting, and policy analysis.
- Manage a group of quantitative analysts that evaluate various supply and demand side alternatives for all three Xcel Energy service territories.
- Serve as quantitative expert for resource planning and purchased power related dockets.

Major Projects:

- Colorado Clean Air Clean Jobs Act – Retire/repower 900MW of existing coal units in PSCo service territory for compliance with regional NOx legislation.
- 2010 Minnesota Resource Plan – 10 year projection of new resource acquisitions, retirements, renewable energy standard compliance, and enhanced conservation programs.
- Jones Station Repowering – Convert existing 240MW gas steam unit to 650MW combined cycle in SPS service territory.
- 2009 PSCo All-Source Solicitation – Modeling/evaluation of bids totaling 20,000MW. Including Gas, wind, solar PV, solar thermal with storage, compressed air storage, pumped hydro, wind/battery combo, and solar augmented combined cycle.
- Manitoba Hydro CON – Economic valuation of 10yr $1.6B purchase from MH.
- Nuclear Uprate Projects – Economic evaluation and expert witness for Prairie Island and Monticello nuclear uprate proceeding in NSP service territory.
- CO2 Regulation - Forecasted rate impacts of American Clean Energy and Security Act (ACES) on the Xcel Energy operating companies.
- Other - Bottom up redesign of Xcel's long-range planning models, focusing on consistency across jurisdictional operating companies and integration of best practices including Monte-Carlo simulation for risk evaluation. Represented Xcel Energy at MISO board of directors/stakeholder meetings on the topic of wind integration. Long range rate forecasts for management and stakeholders. Financial and economic analysis for Excelsior IGCC project. Analysis of long term power purchase from Manitoba Hydro. EEI regulatory accounting seminar.

Software:

- Strategist, Matlab, Prosym, Excel, Access.

Xcel Energy, Minneapolis MN
Demand Side Management (DSM) Technical Analyst 2/05-4/06

Responsibilities:

- Managed cost/benefit analysis of NSP's $45 million annual conservation and load management activities, including forecasting of financial incentives, and strategic planning.

Projects:

- Evaluation and contract negotiations of DSM bids in Colorado service territory.
- Conservation rulemaking in New Mexico, including design of financial incentive mechanism.
- Cost benefit analysis of NSP's three-year conservation and load management strategic plan.

Software:

- Strategist, DSManager, Matlab, Excel.

The Solar Store, Tucson AZ 10/98-8/00
Accountant

- AR/AP, payroll, inventory management, sales, solar energy system design & installation.
- Member of Concerned Arizonans for Renewable Energy (CARE) lobbied in support of solar tax credits in Arizona.

EDUCATION

PhD (all but dissertation) **Applied Economics, University of Minnesota, 3.7GPA** 8/02-1/05

Course Work:

- Emphasis - environmental and natural resource economics. Other course work - Financial economics, econometrics, dynamic programming, production economics, non-parametric frontier analysis, managerial economics, international trade, macro- and microeconomics.

Software:

- SAS, Matlab, Gauss, Stata, Mathematica.

MS Economics, University of Arizona, 3.8GPA 8/00-5/02

Course Work:

- Environmental economics, environmental law, econometrics, linear and quadratic programming, production economics, consumer economics.

Software:

- SAS, Stata, LimDep, Gams, Lindo, Gauss.

BS Finance, University of Arizona 8/92-12/96

Course Work:

- Financial markets and instruments, corporate finance, accounting, statistics, economics, marketing, Russian, French.

STATE OF NORTH DAKOTA
BEFORE THE
PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR AN ADVANCE DETERMINATION OF PRUDENCE FOR THE 150 MW BORDER WINDS PROJECT	**Case No. PU-13-_____**
IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE 150 MW BORDER WINDS PROJECT	**Case No. PU-13-_____**

STATE OF MINNESOTA)
) ss.
COUNTY OF HENNEPIN)

Steven W. Wishart, being first duly sworn on oath, deposes and says that he is Director of Resource Planning and Bidding for Applicant Northern States Power Company, in the above captioned matter, that he has read the testimony and schedules submitted in the above captioned matter under her name were prepared under his direction, that he knows the contents thereof, and that the same is true and correct to the best of his knowledge and belief.

Steven W. Wishart

Subscribed and sworn to before me this 12th day of August, 2013.

CYNTHIA D. HARRINGTON
NOTARY PUBLIC
MINNESOTA
My Commission Expires Jan. 31, 2015

Notary Public
My Commission Expires: 1-31-2015