

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 a 200 MW Power Purchase Agreement  
with the Courtenay Wind Project  
Case No. PU-13-706  
Exhibit \_\_\_\_ (LM-2)

In the Matter of the Application of Northern States Power Company for an Advance  
Determination of Prudence for a 200 MW Power Purchase Agreement  
with the Odell Wind Project  
Case No. PU-13-707  
Exhibit \_\_\_\_ (LM-2)

In the Matter of the Application of Northern States Power Company for an Advance  
Determination of Prudence for the 200 MW Pleasant Valley Wind Project  
Case No. PU-13-708  
Exhibit \_\_\_\_ (LM-2)

In the Matter of the Application of Northern State Power Company for an  
Advance Determination of Prudence for the 150 MW Border Winds Project  
Case No. PU-13-742  
Exhibit \_\_\_\_ (LM-2)

In the Matter of the Application of Northern State Power Company for a  
Certificate of Public Convenience & Necessity  
for the 150 MW Border Winds Project  
Case No. PU-13-743  
Exhibit \_\_\_\_ (LM-2)

**Project Analysis and Impacts**

October 21, 2013

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## SCHEDULES

Resume	Schedule 1
Xcel Energy Response to NDPSC Data Request No. 2-001	Schedule 2

1 I. INTRODUCTION

2  
3 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

4 A. My name is Kurtis J. Haeger. My business address is 1800 Larimer Street, Suite  
5 1400, Denver, CO 80202.

6  
7 Q. WHAT IS YOUR POSITION WITH NORTHERN STATES POWER COMPANY?

8 A. I am the Managing Director of Resource Planning for Xcel Energy Services Inc.,  
9 which supports all of Xcel Energy Inc.'s utility operating companies, including  
10 Northern States Power Company (Xcel Energy or the Company). I have been  
11 involved in the utility industry for over 31 years, in the areas of Gas Engineering,  
12 Gas Acquisition and Planning, and Electric Resource Planning. In my current  
13 role, I am responsible for the direction and oversight of developing and  
14 implementing the Electric resource Plans for all of Xcel Energy Inc.'s utility  
15 operating companies. A statement of my qualifications is provided in  
16 Exhibit\_\_\_(KJH-1), Schedule 1.

17  
18 Q. HAVE YOU TESTIFIED IN THIS PROCEEDING BEFORE?

19 A. No.

20  
21 Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

22 A. The purpose of my Rebuttal Testimony is to adopt the Direct Testimony of  
23 Company Witness Mr. Steven W. Wishart and address a number of the policy  
24 issues discussed in Advocacy Staff Witness Ms. Sara Cardwell's Direct  
25 Testimony. In this Rebuttal Testimony I discuss:

- 1 • The Company’s use of the Strategist modeling tool;
- 2 • The ability for the transmission system to accommodate our proposed 750
- 3 MW of additional wind generation;
- 4 • The impact of wind on our base load generation fleet;
- 5 • The Company’s management of our power purchase agreements (PPA);
- 6 and
- 7 • The impact of the Prairie Rose Project on our North Dakota customers.

8

9 **II. STRATEGIST MODELING**

10

11 Q. IS THE COMPANY’S USE OF THE STRATEGIST MODELING TOOL AN APPROPRIATE

12 WAY TO ANALYZE THE COSTS AND BENEFITS OF THE PROPOSED ADDITION OF

13 750 MW OF WIND GENERATION?

14 A. Yes. The Strategist modeling approach is considered to represent “best

15 practice” in the industry and as such provides us with our most accurate

16 estimate of the benefits our proposal will afford our customers over their

17 contract or service lives. We have not identified any instance where Strategist

18 limited our ability to conduct robust and transparent resource planning.

19

20 While no modeling tool is perfect, we utilize conservative assumptions in our

21 models to help ensure we have realistically identified any potential benefits in

22 our analysis. For example, the Strategist analysis conducted for this application

23 included an average \$7.6 million per year to account for the integration costs

24 associated with wind. Some of these costs are associated with additional

25 ancillary services, such as spinning reserves that are necessary to support

1 variable generation resources. However, at current market prices, these  
2 ancillary services cost only about \$1.1 million per year. The remaining \$6.5  
3 million per year is intended to capture other unknown costs and we believe is a  
4 conservative estimate so that we do not overstate the benefits of our proposal.  
5 I discuss these estimates further in Section III below.

6  
7 Q. IN ADDITION TO STRATEGIST DID THE COMPANY USE ANY OTHER SIMULATION  
8 MODELS TO EVALUATE THE WIND PROJECTS?

9 A. Yes, in addition to Strategist we also used the PROMOD dispatch simulation  
10 model. Recognizing that Strategist does not capture the detailed transmission  
11 line congestion and transmission line losses we also conducted simulations  
12 using the PROMOD model. The PROMOD base case was developed by  
13 MISO for use in their transmission planning process. The model contains  
14 every generator and every transmission line in the MISO footprint and is  
15 capable of forecasting pricing, congestion, and line losses at every location  
16 within the region. As presented in the Direct Testimony of Mr. Wishart, page  
17 24 Table 6, the congestion and line loss estimates forecasted by PROMOD  
18 were added to the Strategist analysis. These costs added approximately \$1 to  
19 \$4/MWh to the projects depending on the location.

20  
21 Q. DID THE PROMOD MODEL APPROPRIATELY ACCOUNT FOR OTHER WIND  
22 EXPANSION PLANNED IN THE REGION?

23 A. Yes, I believe the PROMOD model had conservative assumptions regarding  
24 wind expansion in the region. Table 1 shows that in addition to our proposed  
25 wind resources, the PROMOD model included significant wind additions to

1 the MISO footprint. The total wind in the model more than doubles by 2017  
 2 and almost quadruples by 2027. Such an aggressive wind expansion may not  
 3 occur. However, using these assumptions in PROMOD ensures that we are  
 4 using a conservative assumption for transmission congestion and line losses in  
 5 our analysis

6  
 7 **Table 1 – PROMOD Assumptions for**  
 8 **Wind Generation in MISO West**

	<b>Total Wind Generation</b>	<b>Incremental Additions</b>
<b>2012</b>	4,455MW	
<b>2017</b>	9,814MW	+ 5,359MW
<b>2022</b>	14,225MW	+ 4,411MW
<b>2027</b>	16,935MW	+ 2,710MW

9  
 10  
 11 **III. SYSTEM IMPACTS**

12  
 13 **Q.** CAN THE TRANSMISSION SYSTEM SAFELY AND RELIABLY ACCOMMODATE THE  
 14 COMPANY’S PROPOSED ADDITION OF 750 MW OF WIND GENERATION ALONG  
 15 WITH OTHER PROPOSED WIND GENERATION IN THE REGION?

16 **A.** Yes. The Generator Interconnection Procedure (GIP) implemented by the  
 17 Midcontinent Independent System Operator (MISO) ensures that the  
 18 transmission system can safely and reliably accommodate any new generation,  
 19 not just renewable generation, which interconnects to the transmission system.  
 20 The MISO GIP requires studies be performed to analyze the impact of each  
 21 new generator seeking to interconnect to the transmission system. Based on

1 these studies, generators are required to fund upgrades to the transmission  
2 system to ensure the safe and reliable operation of these generators once  
3 interconnected.

4  
5 Having identified the need to better integrate generation resources across the  
6 entire MISO footprint, MISO developed the first Multi-Value Project (MVP)  
7 portfolio which was approved in December 2012. This portfolio of seventeen  
8 transmission projects will allow more than 41 million MWh of generation to  
9 better integrate into the MISO footprint when completed. As part of its  
10 planning process, MISO will continue to study and identify other potential  
11 projects that can help to economically and reliably integrate additional  
12 generation in the region.

13  
14 Q. WILL THE COMPANY'S PROPOSED ADDITION OF 750 MW OF WIND HAVE AN  
15 ADVERSE EFFECT ON THE COMPANY'S EXISTING BASE LOAD GENERATION  
16 FLEET?

17 A. While there will always be some impact on the base load plants that will be  
18 used to manage around the wind, we believe we have put in place operating  
19 procedures to minimize any effect the wind will have on these plants.

20  
21 The Company has performed a series of studies to investigate potential impacts  
22 of cycling our base load power plants to follow load or the output of variable  
23 generation, like wind. Several recommendations were made to mitigate any  
24 wear and tear associated with cycling and have been incorporated into the way  
25 we operate. For example, we have placed limits on the rate of power output

1 ramping to mitigate the effects of large swings in output of our plants. Our  
2 plant management closely monitors the effects of cycling and will continue to  
3 ensure the plants will be protected from damage due to new wind resources.  
4

5 Q. YOU INDICATED THE COMPANY INCLUDES AN ESTIMATE OF \$6.5 MILLION IN  
6 “UNKNOWN” COSTS RELATED TO INTEGRATION. HOW DID THE COMPANY  
7 ARRIVE AT THIS ESTIMATE?

8 A. We incorporated an average total of \$7.6 million per year to account for  
9 integration costs. This estimate was determined based on a 2006 study of 20  
10 percent wind penetration that utilized detailed generation transmission  
11 simulations to identify the incremental costs to accommodate intermittent wind  
12 generation. Total wind penetration on our system is currently about 13  
13 percent. Since the study was conducted in 2006 we have failed to observe the  
14 additional costs predicted. The study predicted that additional operating  
15 reserves would be necessary as more wind was added to the system. However  
16 the operating reserves required by MISO have actually fallen in recent years.  
17 Furthermore, the study predicted that the cost of reserves would be much  
18 higher than current market prices. We continue to use this study’s cost  
19 estimates as we believe that they are conservatively high and provide for an  
20 additional margin for error in our cost benefit analysis.  
21

22 Based on the current market cost for operating reserves, we estimate that  
23 integration costs for the proposed wind projects will average about \$1.1 million  
24 per year. Using the 2006 study, the Strategist analysis included \$7.6 million per  
25 year for wind integration. Although we do not expect that the projects will

1 cause significant cycling costs due to the operational limits that we have  
2 implemented at our baseload facilities, if such costs should arise, the extra \$6.5  
3 million included in the Strategist modeling ensures that the projects will still be  
4 cost-effective resources for our customers.

5  
6 Q. PLEASE RESPOND TO MS. CARDWELL'S CONCERN REGARDING NEGATIVE LMPs  
7 IN THE MISO FOOTPRINT.

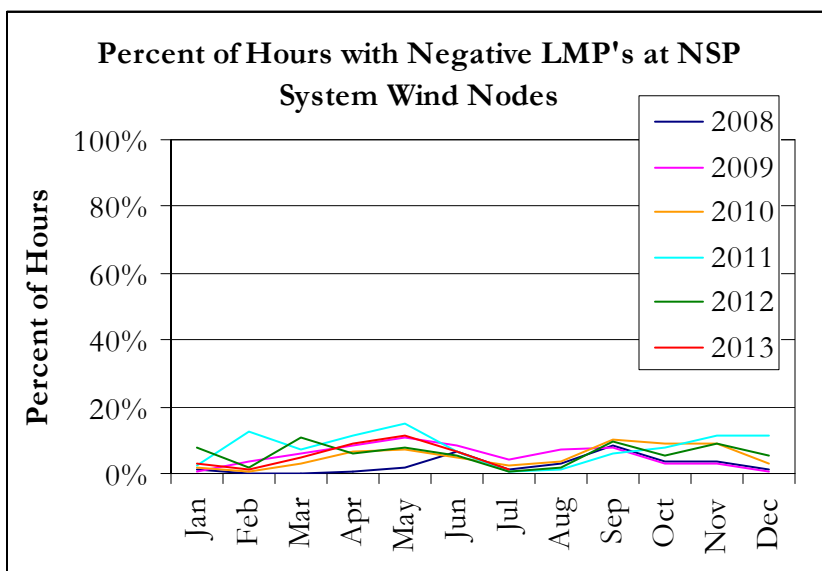
8 A. We agree that negative LMPs are a concern and our economic evaluation of  
9 the projects includes a conservative estimate of negative LMPs and associated  
10 wind plant curtailments.

11  
12 On page 3 of her Direct Testimony, Ms. Cardwell shows a chart of the total  
13 number of hours with negative LMPs for NSP's wind nodes. This chart is a  
14 misleading characterization of the frequency of negative LMP events because it  
15 is based on 30 different LMP pricing nodes. A more relevant comparison  
16 would be to look at the percent of hours that the nodes have negative LMPs.

17  
18 Using the same data as provided to Staff in discovery we have created Figure 1  
19 which shows the number of negative LMP hours as a percent of total. For the  
20 last full year of data (2012), 6.5 percent of the hours had negative LMPs.  
21 However, this does not imply that there would be 6.5 percent curtailments, or  
22 even that there would be a net system cost adder for those 6.5 percent hours.  
23 Through firm transmission rights most of the Company's wind is protected  
24 from negative LMPs. In 2012, only 2 percent of NSP's wind generation was  
25 curtailed. To be conservative, we ran our Strategist analysis assuming that NSP

1 could not sell any excess energy into the MISO market and had to essentially  
2 balance within our own footprint. This conservative approach resulted in our  
3 model curtailing wind an average of 10 percent for the first ten years and the  
4 model while also including the cost of the additional energy that would need to  
5 be generated when the wind was being curtailed.

6  
7 **Figure 1 – Percentage of Hours with Negative LMPs**  
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11 **IV. PPA MANAGEMENT AND PRAIRIE ROSE COSTS**  
12

13 Q. WHAT IS THE COMPANY'S RESPONSE TO MS. CARDWELL'S CONCERNS WITH  
14 RESPECT TO THE COMPANY'S MANAGEMENT OF ITS PPAs?

15 A. We appreciate Advocacy Staff's interest in ensuring that we appropriately  
16 manage our PPA portfolio. I can assure the Commission that we take our  
17 responsibility to appropriately manage all of our contracts seriously and are  
18 cognizant of the impact on our customers of failing to do so.

1  
2 I believe that Ms. Cardwell’s concerns are a result of a misunderstanding  
3 between Advocacy Staff and the Company during the discovery phase of this  
4 proceeding. In our responses to Advocacy Staff’s data requests, the Company  
5 did not include certain PPAs secured through the 2 MW Standard Contract tariff  
6 in place in our Minnesota jurisdiction which led to a mismatch in contract  
7 information we provided in Case No. PU-12-813. We also did not fully explain  
8 our naming conventions, our data reporting sources where certain wind facilities  
9 are aggregated at a particular MISO pricing node, and how we estimate  
10 generation amounts for our FERC Form 1 submissions. I apologize for these  
11 oversights.

12  
13 I have attached the Company’s response to Data Request No. NDPSC-SC-2-001  
14 as Exhibit\_\_\_(KJH-1), Schedule 2, which explains these issues in an effort to  
15 address this misunderstanding.

16  
17 Q. WHAT HAS BEEN THE IMPACT OF THE COMMISSION’S ORDER IN CASE NO. PU-  
18 12-59 ON THE COSTS OF THE PRAIRIE ROSE PROJECT?

19 A. To date, the Company has under-collected approximately \$85,000 of Prairie  
20 Rose PPA costs from our North Dakota customers.

21  
22 The estimated North Dakota portion of the annual costs of the Prairie Rose  
23 PPA is approximately \$1.2 million. However, PPA expenses are not “allocated”  
24 to state jurisdictions per se, but are instead a component of each state’s Fuel  
25 Cost Rider (FCR) calculation, which is then applied to customer bills within each



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**VI. CONCLUSION**

Q. PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY.

A. In summary, our use of the Strategist modeling tool represents industry best practice and we utilized conservative modeling assumptions to mitigate the overstatement of benefits of our proposed wind additions. The transmission system can support our proposed wind additions due to the MISO GIP. Through prudent plant operation, we estimate the effects of our proposed wind addition on our base load fleet to be minimal. Consequently, due to the projected cost savings to our customers, the Commission should grant an Advanced Determination of Prudence for all 750 MW of our proposed wind additions.

Q. DOES THIS CONCLUDE YOUR PRE-FILED REBUTTAL TESTIMONY?

A. Yes.

1 STATE OF NORTH DAKOTA  
2 BEFORE THE  
3 PUBLIC SERVICE COMMISSION  
4  
5

6 In the Matter of the Application of Northern ) Case No. PU-13-706  
7 States Power Company for an Advance )  
8 Determination of Prudence for a 200 MW Power )  
9 Purchase Agreement with Courtenay Wind Project )

10  
11 In the Matter of the Application of Northern ) Case No. PU-13-707  
12 States Power Company for an Advance )  
13 Determination of Prudence for a 200 MW Power )  
14 Purchase Agreement with Odell Wind Project )

15  
16 In the Matter of the Application of Northern ) Case No. PU-13-708  
17 States Power Company for an Advance )  
18 Determination of Prudence for a 200 MW Power )  
19 Purchase Agreement with Pleasant Valley Wind )  
20 Project )

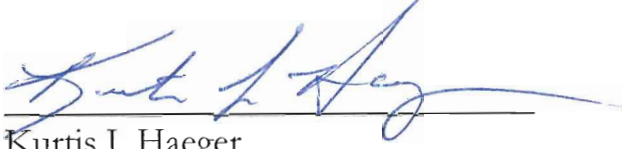
21  
22 In the Matter of the Application of Northern ) Case No. PU-13-742  
23 States Power Company for an Advance )  
24 Determination of Prudence for a 150 MW Power )  
25 Purchase Agreement with Border Winds Project )

26  
27 In the Matter of the Application of Northern ) Case No. PU-13-743  
28 States Power Company for a Certificate of Public )  
29 Convenience & Necessity for the 150 MW Border )  
30 Winds Project )

31  
32 **AFFIDAVIT OF**  
33 **Kurtis J. Haeger**  
34

35 I, the undersigned, being duly sworn, depose and say that the foregoing is  
36 the Rebuttal Testimony of the undersigned, and that such Rebuttal Testimony and  
37 the exhibits or schedules sponsored by me to the best of my knowledge,  
38 information and belief, are true, correct, accurate and complete, and I hereby adopt  
39 said testimony as if given by me in formal hearing, under oath.  
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Kurtis J. Haeger

Subscribed and sworn to before me, this 21st day of October 2013.

  
Notary Public

**YRENE A NUÑEZ  
NOTARY PUBLIC  
STATE OF COLORADO  
NOTARY ID 19874149394  
MY COMMISSION EXPIRES SEPTEMBER 28, 2016**

## **Statement of Qualifications**

### **Kurtis J. Haeger**

I graduated from the University of Colorado, Boulder, in 1982 with a Bachelor of Science Degree in Civil Engineering and from the University of Colorado, Denver, in 1987, with a Master of Business Administration in Finance.

I began my employment with Public Service Company of Colorado in June 1982, as a Gas Distribution Engineer. In June 1988, I was promoted to Supervisor, Gas Utilization and Testing. In May 1990, I was promoted to System Planning & Forecasting Manager, and, in October 1994, I was promoted to Gas Supply and Planning Manager. Upon the merger between Public Service Company of Colorado and Southwestern Public Service Company in August 1997, I assumed the same position with New Century Services, Inc., the service company subsidiary of New Century Energies, Inc. In March 1999, I assumed the position of Director, Gas Business Support. Upon the merger between New Century Energies, Inc. and Northern States Power Company in August 2000, I was appointed to the position of Director, Gas Supply and Supply Planning for Xcel Energy Services Inc. In May 2004, I was promoted to the position of Managing Director, Wholesale Planning, the position I currently hold.

Since 1990, my responsibilities have included the development of forecasts of annual and daily gas requirements, long term price of gas forecasts, cost of gas budgets, business planning, strategic planning, long range gas supply planning and gas integrated resource planning, gas supply purchasing, the purchasing of gas

transportation and storage services and electric resource planning for Public Service Company, Northern States Power Company and Southwestern Public Service. In my present position, I am responsible for the resource planning activities for electric generation, the gas supply planning functions for both the local gas distribution and the electric generation requirements, and the administration of the upstream gas transportation and storage contracts for the Xcel Energy operating companies.

I have presented testimony before the Colorado Public Utilities Commission in Docket Nos. 93A-561G, 94A-447G, 93S-001EG (95I-394G), 02A-267G, 98S-518G, 00A-415G, 97A-622G, 99A-549E, 00A-415G, 01A-181E, 02A-267G, 02S-315EG, 02A-541E, 03A-489EG and Application No. 34815. I have also sponsored testimony before the Federal Energy Regulatory Commission in Colorado Interstate Gas Co.'s rate case Docket Nos. RP93-99 and RP96-190, Northern Natural Gas Co.'s rate case Docket No. RP03-398 and before the Wyoming Public Service Commission in Docket No. 30005-GR-97-51.

**PUBLIC DOCUMENT:  
TRADE SECRET DATA EXCISED**

- Non Public Document – Contains Trade Secret Data  
 Public Document – Trade Secret Data Excised  
 Public Document

Xcel Energy

Docket No.: PU-13-706, PU-13-707, PU-13-708

Response To: North Dakota Public Service Commission      Data Request No. SC-02-001

Requestor: Sara Cardwell

Date Received: September 4, 2013

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Question:

This is the fourth data request we have submitted in regards to obtaining information on the Company's renewable projects. We would hope that the information we are asking for is understandable enough this time that the Company can supply the requested information. Please call if this request is not clear.

- a. In an Excel Spreadsheet, please provide generation data since project COD for:

Asian Children Support	Krysta J. T.
Autumn Hills	Larswind
Bangladesh Children Support	Lucky Wind
Bendwind	Mark J.P.
Brandon	McBeth-3
Breezy Bucks-I	McBeth-1
Breezy Bucks-II	McBeth-2
BT, LLC	McNeilus Windfarm, LLC
Buffalo Ridge Windplant WPP 1993*	Moulton Heights Wind Power
Buffalo Ridge 2*	Muncie Power Partners LLC
Buffalo Ridge 3*	Salty Dog I-
Burmese Children Support	Sierra Wind
Carstensen Wind	Soliloque Ridge LLC
CG Windfarm (missing data)	Spartan Hills LLC
DeGreeff DP	Stahl Wind Energy
DeGreeffpa	Sun River LLC
Florence Hills	TAIR Wind
Gar Mar Wind I	Theresa M.T.
Gary J. T.	Triton Windfarm
Greenback Energy	Tsar Nicolas
Groen	Twin Lake Hills
Hadley Ridge LLC	Vandy
Henslin Creek Windfarm	Vindy
Hillcrest Wind	Wally's
Hope Creek LLC	Wasioja

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TRADE SECRET DATA EXCISED**

Indian Children Support  
Jack River LLC  
Jenna M.T.  
Jessica Mills LLC  
Julia Hills, LLC

Willhelm  
Wilson-West  
Windy Dog I  
Winter Spawn LLC

- b. For Fenton Power, is the generation value provided in 1-37 correct for both projects combined? Can the FERC Form 1 data for 2012 be split out for each project?
- c. John Deere Renewables, LLC – are ND customers paying for this project? If so we need information on the size, costs and when it went into service.
- d. Lake Benton PP – If this project went into commercial operation in 1998 – why was there no generation included for 2001-2004?
- e. If Lakota Ridge went into service in 2004 why is there generation prior to that in the response?
- f. If Metro Wind, South Ridge and St. Olaf projects are less than 2 MW why do they get reported in the FERC Form 1 but the other less than 2 MW projects don't?
- g. NAE Shaokatan Hills – in response to 2-8 the Company states this went into commercial operation in 2004 but 1-37 has generation for this project starting in 2001 – which is it? If 1-037 is incorrect, please provide the correct generation from 2001 through 2012.
- h. NAE Shaokatan is listed on 2-8 as under 2 MW but in looking at the generation, the project can't be less than 2 MW. So, either 2-8 or 1-37 is wrong. Please provide the correct generation and size for this generation facility. Additionally, 2-8 and 1-37 do not agree as to the commercial operation date of this facility.
- i. Norgaard North – Our data request NDPSC-02-008 in PU-12-813 requested information on all contracts that flow through the fuel clause. It did not specify that if there was no generation in 2012 that the contract information should not be reported. Please supply all information regarding this contract that would comply with all prior data requests (commercial operation date, size, price per MWH, generation, etc.). Is this project in commercial operation and does the Company expect to receive generation from this project in the future?
- j. Norgaard South – Our data request NDPSC-02-008 in PU-12-813 requested information on all contracts that flow through the fuel clause. It did not specify that if there was no generation in 2012 that the contract information should not be reported. Please supply all information regarding this contract that would comply with all prior data requests (generation, commercial operation date, size, price per MWH, etc.). Is this project in commercial operation and does the Company expect to receive generation from this project in the future?

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- k. North Ridge Wind Farm LLC – the response to NDPSC-SC-0-21 in Case Nos. 13-706, 13-707 and 13-708 states that North Ridge Wind Farm LLC is also identified as Windridge in IR 1-037 in Case No. PU-12-813. Is it correct to state this project only generated in 2006? If so, shouldn't the Company cancel the contract?
- l. Northern Lights Wind – I see no project called NAE. I do not find any generation for this contract in data request response 1-37. Please provide this information, all names used for this project and the correct name for this project.
- m. Rutherton Ridge LLC – please confirm the size of this project. Based on the response to 2-8, this is an under 2 MW project. However the generation provided in response to 2-37 does not fit with the generation one would expect from a less than 2 MW project.
- n. S&P Windfarm - . Is it correct to state this project only generated in 2003 and then in 2004 it generated a negative amount equal to that produced in 2003? If so, shouldn't the Company cancel the contract?
- o. Shaokatan – There are actually three Shaokatan projects listed in 1-37 but only two contracts are included in 2-8. Provide the additional contract information for 2-008 and please confirm the correct names for these three projects such that both data request responses use the same language to identify each project and any missing information such as generation, commercial operating date, etc.
- p. TG Windfarm seems to have a lot of years where it didn't produce. Please confirm that the lack of data is correct in 1-37. Also provide information as to how the Company is managing this contract and if the contract should be canceled for non-performance if the values are correct. If the values are not correct, please supply the missing data.
- q. Tofteland Windfarm, L.L.C. - seems to have a lot of years where it didn't produce. Please confirm that the lack of data is correct in 1-37. Also respond as to why the Company doesn't cancel the contract for non-performance if the values are correct. If the values are not correct, please supply the missing data.
- r. Viking – Please confirm the size and generation from this facility. Either the data in 1-37 is incorrect as using the MW size from 2-008 results in a capacity factor greater than 1 or the size of the generator is incorrect. Please provide the correct data.
- s. Windpower Partners – has a commercial operating date of 1994 yet no generation is shown prior to 2005. Please confirm the commercial operating date and if it is 1994, please provide the missing generation values per year starting in 2001.

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- t. WoodStock Hills, L.L.C. – COD is listed as 5/1/04 yet the generation starts in 2001. Please provide the correct generation values and, or the correct COD.
- u. Zephyr Wind – please provide the information as requested in 2-008 and 1-37 for this project.
- v. Also explain why FERC Form 1 generation data was different from that provided in response to 1-037.

\* Also need to know Capacity in MW

Response:

We apologize for any confusion created by our responses to Data Request Nos. 1-037 and 2-008 in this docket. There are a few primary reasons why our responses to each request did not appear to coincide:

- Energy production data for certain small wind projects is not individually metered but is instead metered and reported with other small projects on a combined or “aggregate” basis;
- The generation data reported in the FERC Form 1 includes estimates; and
- Some wind project names have changed over the passage of time, or are very similar to other, separate wind projects.

Data Request No. 1-037 requested energy production, which is metered at either the specific project level or at a group (aggregator) level, depending on the size, interconnection background, and/or contractual arrangements. Data Request No. 2-008 sought certain attributes of each individual project, such as the facility’s capacity, the commercial operation date, the contract term, etc.

In our response to DR No. 1-037, we provided energy data at a project level if it was individually metered, and at an aggregator level if it was not. While many of the wind projects are metered, the energy from most of the smaller wind energy power producers is delivered via aggregators who provide the transmission interconnection point for multiple projects. These are metered as part of a “group” of projects. Because we were able to provide specific characteristics of each and every contracted project in our response to DR No. 2-008 (including the smaller, aggregated projects), there was not always a direct match between the generation data of DR No. 1-037 and the attributes provided in the longer list of projects provided for DR No. 2-008.

To clear up the confusion created by reporting aggregate-level energy data in one response and individual project attributes in the other, we are providing Attachment A to this response which categorizes individual projects under their respective

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aggregators (where applicable). In the various responses below we have also made every attempt to better explain the nuances in the data and project names that also contributed to the confusion. Again, we regret that our earlier responses to DR Nos. 1-037 and 2-008 were not more clearly aligned.

- a. See Attachment A to this response for the generation data for the requested wind projects as well as all other wind projects, categorized where applicable by the associated aggregator group. Attachment A is in a format similar to the response to DR No. 2-008.
- b. The generation data provided for the Fenton I and II facilities in DR No. 1-037 is correct. Though the Fenton project was contracted as one 205.5 MW project (this capacity is a correction of the 208.75 MW capacity shown in the response to DR No. 2-008), there are two metering points. We have provided the breakdown of the FERC Form 1 generation between Fenton I and Fenton II in the table below. Please note that the annual amounts shown in the FERC Form 1 reflect an estimate of December generation, since the actual December amount is generally not available at the time the Form 1 is compiled.

	<b>MRETS MWh<sup>1</sup></b>	<b>FERC Form 1 MWh<sup>2</sup></b>
<b>Fenton I</b>	372,409	371,919
<b>Fenton II</b>	379,671	379,155
<b>Total</b>	752,080	751,074

(1) Source: MISO

(2) Reflects estimated values for the month of December.

- c. JD Renewables was the previous owner of the Cisco, Ewington, and Shane's Wind Machine projects, as well as the smaller projects included in the Norgaard North and Norgaard South groups. In 2010, JD Renewables was purchased by Exelon Wind LLC. The generation data for the Norgaard aggregators and the other projects now owned by Exelon was reported in our response to DR No. 1-037, and the other attributes of each individual project were provided in our response to DR No. 2-008. The PPA costs associated with these projects are recovered through the ND Fuel Cost Rider.
- d. Lake Benton Power Partners I and II were initially known as Buffalo Ridge II and Buffalo Ridge III, respectively. As shown on the response to DR No. 2-008, Lake Benton I (Buffalo Ridge II) had a COD of Dec. 14, 1998 and Lake Benton II (Buffalo Ridge III) had a COD of May 31, 2000. In our response to DR No. 1-037, we showed the generation from 2001-2004 under the project

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names Buffalo Ridge II and Buffalo Ridge III. From 2005 to 2011, the generation for these two facilities was combined and shown under the “Lake Benton PP” aggregation.

- e. The NAE Lakota Ridge project began operation in March 1999, but was unable to obtain formal Commercial Operation status from MAPP due to transmission constraints. As a result, the project was deemed to be in “Partial Commercial Operation” until May 1, 2004.
- f. The data listed in the FERC Form 1, pages 326-327, includes Power Purchase Agreements that are included in FERC Account 555. Unlike most other small projects, the 1.65 MW St. Olaf and 0.67 MW Metro Wind projects are each metered individually. The South Ridge line item in the FERC Form 1 does not represent the individual 1.80 MW project called South Ridge, but instead reflects the combined output of the South Ridge and 1.80 MW Metro Wind projects aggregated under the South Ridge Power Partners group.
- g. The NAE Shaokatan Hills project began operation in June 1999, but was unable to obtain formal Commercial Operation status from MAPP due to transmission constraints. As a result, the project was deemed to be in Partial Commercial Operation until May 1, 2004. The response to DR No. 1-037 shows the correct generation for this project.
- h. The generation shown for the Shaokatan project in our response to DR No. 1-037 reflects an overstatement of production in 2003 and 2004. This was subsequently corrected in 2005, offsetting most of the generation in that year. Energy was only purchased from Shaokatan from September 2003 until September 2005. This PPA was ultimately terminated in May 2013 due to performance issues.
- i. Norgaard North is an aggregated group of wind projects consisting of Roadrunner I, Salty Dog, Wally’s Wind Farm and Windy Dog I, all of whom began commercial operations on May 11, 2006. The requested generation data was provided for the Norgaard North group in our response to DR No. 1-037 and is shown again in Attachment A. The specific attributes of each project in the Norgaard North group were also reported in our response to DR No. 2-008. The projects are in commercial operation and the Company expects to receive generation from these facilities in the future.
- j. Like Norgaard North, Norgaard South is an aggregated group of wind projects

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consisting of Breezy Bucks I and II and Salty Dog II. The requested generation data was provided for the Norgaard South aggregator in our response to DR No. 1-037. The specific attributes of each project in the group were also reported in our response to DR No. 2-008. The projects are in commercial operation and the Company expects to receive generation from these facilities in the future.

- k. In our response to DR No. 1-037, we listed the Windridge project as part of the Company's wind portfolio. This was a typographical error in our database as there is no Windridge project. In 2006, a portion of the energy generated by the Westridge group of five 1.90 MW wind projects (see Attachment A) was inadvertently recorded under the erroneous Windridge label. Regrettably, in our response to data request DR No. SC-21 we also incorrectly stated that the Windridge project should have been identified as the Northridge project. Again, there is no Windridge project, and the energy reported in our response to DR No. 1-037 was actually a misplaced portion of the 2006 production from the Westridge aggregated group.
- l. Northern Lights Wind is not an NAE (North American Energy) project, but rather a project within the Pipestone group of projects. Our response to data request DR No. 1-037 provided the generation for the Pipestone aggregation. The attributes of the Northern Lights Wind project were provided in our response to DR No. 2-008.
- m. "Ruthton Ridge" is the name of both a small wind project and an aggregator group. The Ruthton Ridge group reported in DR No. 1-037 consists of the following projects: Florence Hills, Hadley Ridge, Hope Creek, Ruthton Ridge, Soliloquy Ridge, Spartan Hills, Twin Lake Hills, and Winter Spawn. The generation data was provided for this group of projects in our response to DR No. 1-037, and the attributes of each individual project was reported in our response to DR No. 2-008.
- n. The S&P Windfarm never went into commercial operation. The 2003 energy production shown in our response to DR No. 1-037 reflects an estimated December output, which was also reported on FERC Form 1. This estimate was subsequently reversed in 2004 to reflect the fact that no energy was actually generated (nor any payments made).
- o. The "North Shaokatan" entity listed in DR No. 1-037 is an aggregator of the following group of small wind projects: Autumn Hills, Jack River, Jessica Mills,

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Julia Hills, Sun River, and Tsar Nicholas. The generation data was provided for this group in our response to DR No. 1-037, and the attributes of the individual projects (but not the North Shaokatan aggregator) was provided in the response for DR No. 2-008. Two other distinct projects, the “Shaokatan Hills” and “Shaokatan” wind farms, are not part of an aggregator group and were also shown in our DR No. 1-037 response. The attributes of these two projects were also reported in our response to DR No. 2-008. The table below (and Attachment A) identifies the relationships of the wind projects and aggregator that have “Shaokatan” as part of their name.

<b>Wind Project</b>	<b>Aggregator</b>
Autumn Hills	NAE North Shaokatan
Jack River LLC	NAE North Shaokatan
Jessica Mills LLC	NAE North Shaokatan
Julia Hills LLC	NAE North Shaokatan
Sun River LLC	NAE North Shaokatan
Tsar Nicolas	NAE North Shaokatan
Shaokatan	NAE Shaokatan
Shaokatan Hills	NAE Shaokatan Hills

- p. TG Windfarm has been producing energy every year since its December 28, 2003 COD. However, in 2005 we began reporting energy production from TG Windfarm as part of the Westridge group generation, along with Bisson Windfarm, CG Windfarm, Tofteland Windfarm, and Westridge Windfarm. While generation is no longer reported at the project level, TG Windfarm continues to perform well.
- q. As with the TG Windfarm (see part p. response above), Tofteland Windfarm became part of the Westridge Group aggregation beginning in 2005. Since then, energy generation for Tofteland has been included in the Westridge group total.
- r. “Viking” is the name of both a small wind project and an aggregator group. The 1.50 MW Viking Wind Farm is part of the Viking group, along with Buffalo Ridge wind farm, Moulton Heights, Muncie Power Partners, North Ridge, Vandy South, Vindy Power Partners, and Wilson-West Windfarm. The generation for the Viking aggregator was provided in our response to DR No. 1-037, and the attributes of each project in the group was reported in our response to 2-008.

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- s. The Windpower Partners project has a COD of May 3, 1994. Generation from this project was reported in our response to DR No. 1-037 as “Buffalo Ridge I” prior to 2005 and has been reported under “Windpower Partners” since 2005.
- t. Woodstock Hills LLC began operation in May 1999, but was unable to obtain formal Commercial Operation status from MAPP due to transmission constraints. As a result, the project was deemed to be in Partial Commercial Operation until May 1, 2004.
- u. Zephyr Wind is also known as Community Wind South. This project was included in our response to DR No. 2-008. Community Wind South has a commercial operation date of December 26, 2012. The project was not listed in the response to DR No. 1-037, as the data provided at that time was for the period 2001-2011.
- v. FERC Form 1 generation data is reported for a calendar year including generation estimates for the month of December (actuals are not available at the time FERC data is being compiled). The December data is reconciled in the following year’s filing. Most of the data provided in our response to DR No. 1-037 was from MRETS and reflects actual production data by generator. Therefore, it is unlikely the FERC Form 1 will match the data reported in our response to DR No. 1-037 (in a few instances, prior to the implementation of MRETS, the data might be consistent with FERC Form 1).

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Northern States Power Company

Case Nos. PU-13-706, 707, 708  
 Information Request NDPSC-2-001

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Attachment A  
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**Renewable Power Purchase Agreements Recovered Through the Fuel Cost Rider**

	Location	Type	Capacity (MW)	RES* Comply	CBED Project	Commercial Oper. Date	Contract Term	Contract Termination	Contract Prices	MPUC Docket No.	MWH Generation										
									Energy (\$/MWh)												
Wind Power Partners 1993 (Buffalo Ridge I)	MN	Wind	25.00	Y		5/3/1994	25	5/2/2019		E002/RP-93-630	61,045	63,830	60,866	63,120	61,487	51,662	66,344	62,841	53,709	53,592	48,579
Winona County Wind	MN	Wind	1.50	Y	Y	10/27/2011	20	10/26/2031		E002/M-09-1247											1,355
Woodstock Hills Wind Farm	MN	Wind	10.20			5/1/2004	30	4/30/2034		E002/M-97-1580	26,877	28,332	26,702	25,928	25,090	23,649	26,903	25,303	21,512	19,540	21,950
Woodstock Municipal Wind, LLC	MN	Wind	0.78	Y	Y	6/24/2010	20	6/23/2030		E002/M-09-1055										847	1,412
<b>Solar</b>																					
Best Power (St. John's Solar)	MN	(DC)	0.40	Y		5/27/2010	20	5/26/2030		E002/09-1481											
Outland Solar	MN	Solar (DC)	2.00	Y		1/1/2013	20	12/21/2032		E002/M-11-490											
<b>Biomass</b>																					
FibroMinn	MN	Biomass	55.00	Y		9/11/2007	21	6/30/2028		E002/M-00-1169, E002/M-11-198											
KODA Energy LLC	MN	Biomass	12.00	Y		5/18/2009	10	5/17/2019		E002/M-08-1098											
Laurentian Energy Authority I	MN	Biomass	35.00	Y		1/1/2007	20	12/31/2026		E002/M-04-91, E002/M-09-913											
Burnsville)	MN	Biomass	4.70	Y		5/1/1994	26	3/30/2020		E002/AI-94-378, E002/M-10-161											
Pine Bend	MN	Biomass	12.00	Y		3/31/1996	30	12/31/2025		PURPA E002/M-10-822											
St. Paul Cogeneration	MN	Biomass	25.00			3/25/2003	20	3/24/2023		E002/M-96-1405											

\* Renewable Energy Standard