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October 25, 2011

Ms. Patricia Van Gerpen, Executive Director  
South Dakota Public Utilities Commission  
State Capitol Building  
500 East Capitol Avenue  
Pierre, South Dakota 57501-5070

Dear Ms. Van Gerpen:

Re: Annual Wind Curtailment Forecast  
Docket No. EL09-009

Dear Ms Van Gerpen:

Pursuant to the Settlement Stipulation in the above-referenced docket, enclosed please find the Northern States Power Company, a Minnesota corporation (“Xcel Energy” or the “Company”), operating in South Dakota, Annual Wind Curtailment report as filed annually with the MPUC in the Annual Automatic Adjustment report.

You may direct any questions regarding this Report to myself at 339-8350 or Nancy Haley (612) 330-2856.

Sincerely,

A handwritten signature in black ink that reads 'J Wilcox'.

Jim Wilcox

## **2011 WIND CURTAILMENT REPORT**

### **1. Introduction**

The Commission's Order of April 4, 2006 regarding curtailment payments to wind developers (Docket No. E999/AA-04-1279) requires the Company to provide in its Annual Automatic Adjustment reports a projection of wind generation curtailment costs given existing and planned wind energy purchases and transmission system requirements. In compliance with the Commission's Order, this report provides a summary of the Company's recent experience regarding wind curtailment payments, an estimate of potential curtailment payments over the next five years, and the assumptions used to develop our forecast.

### **2. Curtailment Update**

Historically, the primary reason for the curtailment of wind production from purchased power agreement ("PPA") wind farms has been the lack of transmission system capacity. The majority of this wind curtailment occurred in southwest Minnesota. This curtailment took place because the installed capacity of Company purchased wind generation exceeded the outlet capacity of the transmission system; both during system intact and prior outage conditions.

Transmission system improvement projects in recent years have resulted in a substantial reduction of curtailment from those same southwest Minnesota PPA wind farms. These improvements include the 825 MW Wind Transmission Expansion ("825 Project") and the Buffalo Ridge Incremental Generation Outlet ("BRIGO") projects. Curtailment numbers from southwest Minnesota have improved as follows:

- In 2007, about 112,500 MWh were curtailed for transmission reliability
- In 2010, about 43,500 MWh were curtailed for transmission reliability
- In the first quarter of 2011, about 1,650 MWh were curtailed for transmission reliability

It should be noted that 28,920 MWh of the 43,500 MWh curtailed in 2010 in southwestern Minnesota took place from August 16 –September 24 due to three system improvements. Two of the improvement projects were for interconnection new wind farms to the grid and the third improvement was for a reconfiguration of the Chanarambie substation. The time-frame for the work was selected to avoid outages during the summer peak period (June – August) and to avoid the Fall months when wind generation production is typically higher. However, during the August 16 – September 24 event, stronger than average wind speeds were experienced, resulting

in significant wind curtailment costs for several projects including Chanarambie, Fenton, Lake Benton I, Lake Benton II, Moraine I, and Wind Power Partners.

In the past, wind generation and curtailment have been closely connected to the Federal Production Tax Credit<sup>1</sup> (“PTC”). The need to secure the PTC before its expiration<sup>2</sup>, and the uncertainty surrounding Congressional approval for extending the PTC provision, often resulted in wind generation projects going into service prior to completion of all required transmission upgrades. The existing PTC provision is set to expire on December 31, 2012 and we have a number of new PPA wind projects in southwestern Minnesota proceeding with construction in 2011 – 2012 in order to qualify for the PTC before its possible expiration. Due to our transmission system improvements, however, we do not anticipate these new projects will face any substantial levels of curtailment under system intact conditions. Although some minimal level of curtailment may be experienced, it more likely will be driven by prior outages or force majeure events.

### **3. Transmission Improvements & Rotation Schedule**

The following table shows the southwest Minnesota projects that increased the available transmission outlet from 260 MW to the present limit of 1,250 MW. In addition, the CapX Brookings – Twin Cities 345 kV line is expected to increase this limit to 1,950 MW when it is completed in 2015.

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<sup>1</sup> Section 603, Job Creation and Worker Assistance Act (P.L. 107-147) enacted on March 9, 2002 extended the PTC from March 2002 through end of 2003. The Working Families Tax Relief Act, (P.L. 108-311) enacted on October 4, 2004 extended the PTC from October 2004 through the end of 2005.

<sup>2</sup> The PTC has been extended six times, and on two occasions the PTC was not extended until after the previous PTC expired. Expiration dates for the PTC program have been the last day of each of the following years: 1999, 2001, 2003, 2005, 2007, 2008 and 2010. The current PTC provision is set to expire on December 31, 2012 and there is uncertainty on whether it will be extended.

<b>Transmission Project</b>	<b>Wind Outlet Increase</b>	<b>SW MN Wind Limit</b>
425 MW Wind Transmission Expansion Project	October 2004 <sup>3</sup>	425 MW
825 MW Wind Transmission Expansion Project	December 2007 <sup>4</sup>	880 MW
Buffalo Ridge Incremental Generation Outlet (BRIGO)	December 2009 <sup>5</sup>	1250 MW <sup>6</sup>

In southeastern Minnesota, the Adams – Rochester 161 kV line upgrade has recently been completed and curtailment at Mower County has decreased. Also, Xcel Energy applied to the Commission for a Certificate of Need and Route Permit for the Pleasant Valley - Byron 161 kW line on December 3, 2009. The Byron – Pleasant Valley line is scheduled to be completed in Fall 2012, and congestion should further diminish when it goes into service.

On a statewide basis, work has begun on the first phase of the CapX 2020<sup>7</sup> (“CapX”) transmission project. The CapX project will increase generation outlet capacity around the state and further reduce wind production curtailment.

The first phase of the plan is comprised of four transmission project proposals:

- An approximately 150-mile, 345 kV transmission line between the southeast corner of the Twin Cities, Rochester, and La Crosse, Wisconsin
- An approximately 200-mile, 345 kV transmission line between Brookings, South Dakota, and the southeast corner of the Twin Cities; plus a related 30-mile, 345 kV transmission line between Marshall and Granite Falls with 230 kV connections to the system near Granite Falls, Minnesota
- An approximately 250-mile, 345 kV transmission line between Fargo, North Dakota, Alexandria, St. Cloud, and Monticello in Minnesota

<sup>3</sup> Completion of majority of 425MW transmission facilities, and creation of the SW MN Wind operating guide, allowed the 425 MW, SW MN Wind limit increase in October 2004. All 425 MW transmission facilities were completed in December 2006.

<sup>4</sup> Completion of majority of 825 MW transmission facilities, and update to the SW MN Wind operating guide, allowed the 880 MW, SW MN Wind limit increase in December 2007. All 825 MW transmission facilities were completed in June 2008.

<sup>5</sup> The BRIGO upgrades were completed in January 2010.

<sup>6</sup> With the completion of the BRIGO facilities, the southwest Minnesota operating guide will no longer use a total southwest Minnesota Wind Limit. The operating guide now includes limits for various facilities. The SW MN Wind limit referenced in this document is an estimate of the total limit.

<sup>7</sup> CapX 2020 stands for “Capacity Expansion by the year 2020”. Participating utilities include: Great River Energy, Midwest Municipal Transmission Group, Minnesota Power, Missouri River Energy Services, Ottertail Power Company, Rochester Public Utilities, Southern Minnesota Municipal Power Agency, Wisconsin Public Power, Inc and Xcel Energy.

- An approximately 70-mile 230 kV transmission line between Grand Rapids and Bemidji, Minnesota

The Commission issued its Order on April 16, 2009 for the three CapX 345 kV transmission line projects, and modified its Order on August 10, 2009.<sup>8</sup> We anticipate these lines could be placed in service in the 2012-2015 timeframe.

In the past, on a predetermined, rotational basis, southwestern Minnesota wind facilities took turns reducing or turning off generation (“curtailing”) as a way to maintain the wind output from the area at, or below, the levels determined appropriate by MISO. Seven projects were included in our curtailment rotation, selected by their ability to quickly respond to operator requests to reduce generation:

- Lake Benton Power Partners I (107.25 MW)
- Lake Benton Power Partners II (103 MW)
- Chanarambie Power Partners (85.5 MW)
- Moraine Wind (51 MW)
- Fenton Power Partners (200 MW)
- MinnDakota (150 MW)
- Enel North America, Inc. (27 MW)

In addition to the projects identified above, we have seen a limited amount of curtailment at the following projects in Minnesota:

- FPL/Mower County (98 MW)
- Jeffers Wind (50 MW)
- Ulk (4 MW)
- Ewington (20 MW)
- Wind Power Partners (25 MW)

#### **4. Wind Generation and Curtailment Projections**

The following wind generation additions are included in our wind generation and curtailment projections:

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<sup>8</sup> See MPUC Docket No. ET-2, E-002, *et al.*/CN-06-1115.

<b>In-Service Date</b>	<b>Wind Project</b>
January 2010	4.5 MW Ulk Wind
January 2010	26 MW Ridgewind Wind
August 2010	20 MW Grant County Wind
December 2010	200 MW Nobles Wind
March 2011	20 MW Adams Wind
March 2011	20 MW Danielson Wind
May 2011	30 MW Community Wind North Wind
June 2011	1.5 MW Winona County Wind
December 2011	10 MW Valley View Wind
December 2012	36 MW Big Blue Wind
December 2012	78 MW Goodhue North and South Wind
December 2012	200 MW Prairie Rose Wind <sup>9</sup>
December 2012	30 MW Community Wind South <sup>10</sup>

For purposes of our projections, the transmission limits in the following table are assumed:

<b>Year/Transmission Project</b>	<b>Transmission Limit</b>
January 2010: BRIGO project completed (Current Limit)	1,250 MW <sup>11</sup>
January 2015: CapX Brookings – Twin Cities 345 kV line completed	1,950 MW <sup>12</sup>

### **Chart 1 – Wind Development (MW)**

This chart shows Company-owned and purchased wind generation throughout the NSP service territory on an incremental and cumulative basis through the end of calendar year 2010, along with wind purchases for projects on-line or scheduled to come on-line in 2011 and 2012

<sup>9</sup> A power purchase agreement (PPA) for Prairie Rose has been executed and was submitted to the Commission for approval on June 20, 2011.

<sup>10</sup> A power purchase agreement (PPA) for CWS has been executed and was submitted to the Commission for approval on August 4, 2011.

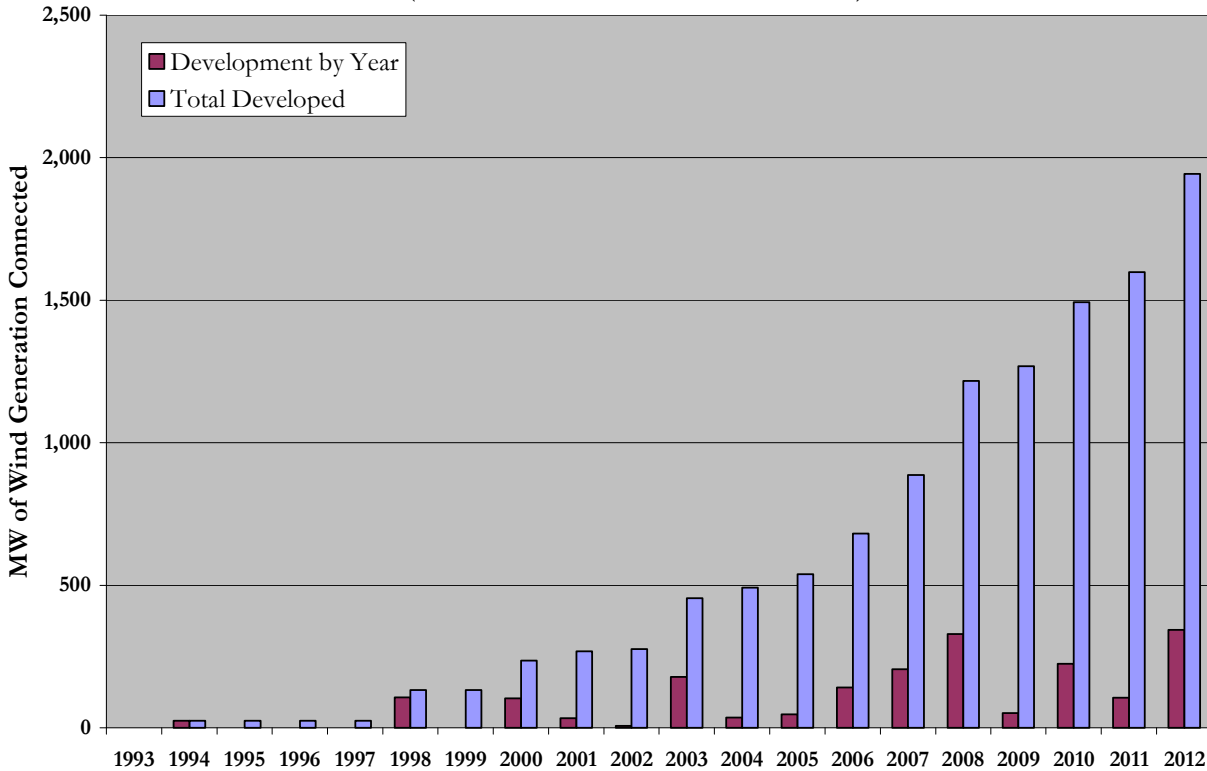
<sup>11</sup> Estimated transmission outlet.

<sup>12</sup> Estimated transmission outlet.

### CHART 1

#### NSP Wind Development

(1993 - 2010 Actual, 2011 - 2012 Scheduled)



Beginning in 2003, wind curtailment protocols have been used to stay within the transmission outlet limits as new facilities were developed and placed in service. The allowable wind outlet increased as new transmission projects were placed in service.

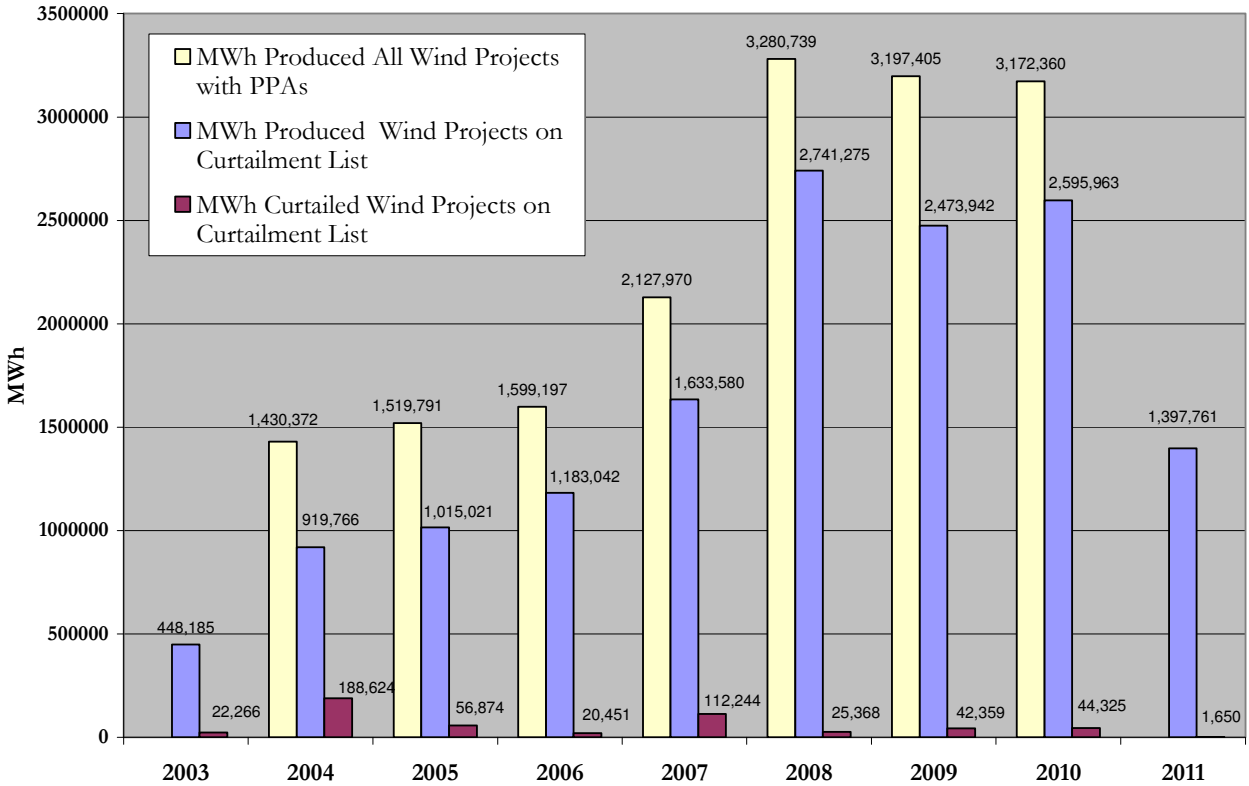
#### Chart 2 – Wind Production & Curtailment (MWh)

Chart 2 shows the comparison between total wind energy produced from wind projects on the curtailment rotation list and the wind energy curtailed from those projects through May, 2011. Despite the lead/lag of generation and transmission development, Chart 2 shows that wind curtailment is small compared to total wind generation delivered. The highest curtailment year was 2004. Chart 2 shows that when the transmission outlet was increased to 425 MW in October 2004, curtailment in 2005 and 2006 decreased significantly. In 2007, curtailment was primarily driven by transmission facility outages that were necessary in order to complete the southwestern Minnesota 825 MW outlet transmission project, along with bringing the Fenton and MinnDakota projects on-line in order to take advantage of the PTC.

**Chart 2**

**Wind Production & Curtailment (MWh)**

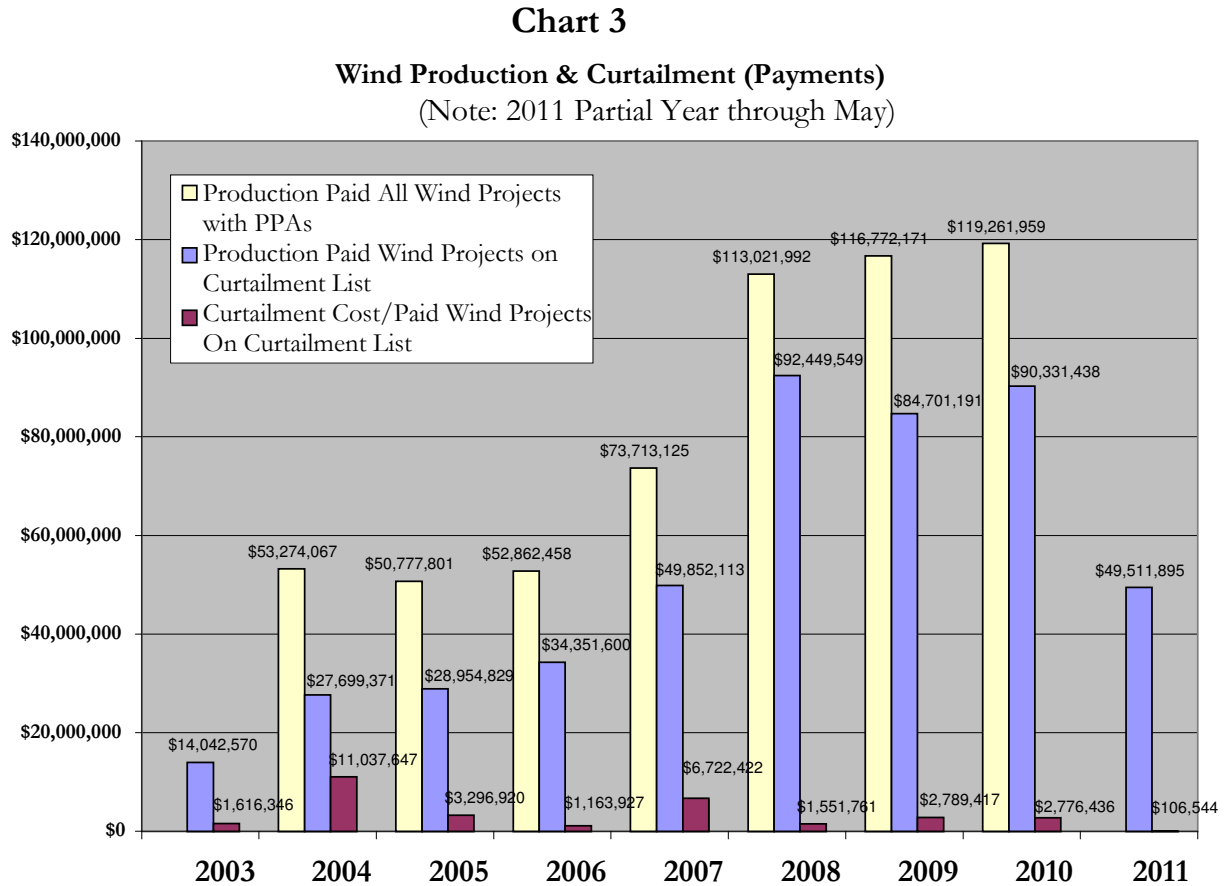
(Note: 2011 Partial Year through May)





### Chart 3 – Wind Production & Curtailment Payments

Chart 3 shows the corresponding production and curtailment costs paid by customers through May, 2011.

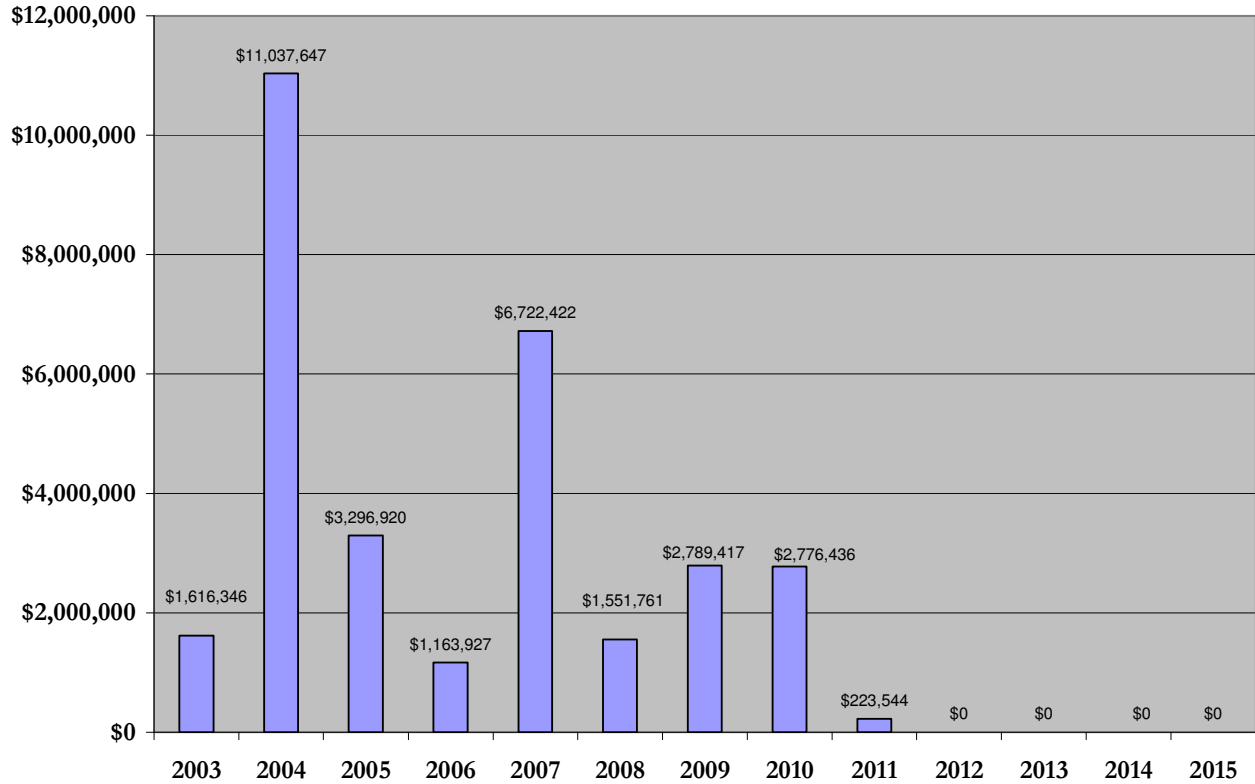


### Chart 4 – Wind Curtailment Payments

Chart 4 shows the Company’s historical wind curtailment costs along with the five year estimate of future costs associated with our PPA wind farms, most of which are located in southwestern Minnesota. Based on system intact conditions, we are forecasting zero curtailment costs in the 2012 – 2015 timeframe. It is important to understand we are not attempting to estimate curtailment associated with prior outages, minimum generation events or negative Locational Marginal Pricing (“LMP”) events because of the uncertainty surrounding their frequency and duration. A minimum generation event occurs when MISO experiences conditions in which they have a supply surplus on a market footprint-wide basis. Negative LMP occurs when supply exceeds demand in the MISO footprint, forcing sale prices to turn negative.

### Chart 4

**Wind Curtailment Payments**  
 (2003-2010 Actual; 2011 - 2015 Projected)



We also wish to note that our curtailment forecast only pertains to the directive in the Commission’s Order of April 4, 2006 (ORDER ADOPTING TREATMENT OF CURTAILMENT PAYMENTS TO WIND DEVELOPERS THROUGH THE FUEL CLAUSE ADJUSTMENT) in Docket No. E,G999/AA-04-1279. As such, our forecast responds to the Commission’s desire to “track the rise and fall of curtailment costs in relation to the construction of transmission lines and, importantly, to ensure that the construction of transmission lines in fact continues to occur.” In other words, our forecast is not a system-wide assessment. Market conditions appear to be changing throughout MISO’s footprint, and we are likely to see an increase in MISO minimum generation and negative LMP events due to a supply surplus or system congestion rather than lack of transmission lines available for outlet capacity. These events may result in some amount of curtailment at Company-owned or PPA wind farms, but such an estimate is beyond the scope of this report.

### 5. Conclusion

Over the next five years, we anticipate wind generation curtailment and the associated payments to vendors will likely remain at or below present levels based on system

intact conditions. In 2009 and 2010, curtailment payments were approximately \$2.7 million per year. From January – May 2011, curtailment costs have totaled \$106,543 and we do not anticipate the 2011 total will exceed \$225,000 based on system intact conditions. In the 2012 to 2015 time frame, our curtailment projection indicates zero Company curtailment costs based on system intact conditions. Going forward curtailment payments will likely be driven by factors other than lack of transmission capacity for generation outlet. Lost production due to major storms are considered a force majeure event and not compensable. However, planned outages and unplanned outages will still occur and trigger some level of compensable curtailment. Minimum generation and negative LMP events will also result in some level of curtailment. In addition, system conditions and wind project development are very dynamic and actual results will vary from that projected with this snapshot of information. We will continue to refine and gather information for use in future updates to be submitted with subsequent AAA reports.