

5. Wind Curtailment Report (Docket Nos. E002/M-00-622, E002/M-02-51, E002/M-04-404, E002/CN-01-1958, E002/M-04-864, E,G999/AA-04-1279, E002/M-05-1850, E002/M-05-1934 and E002/M-06-85)

On July 17, 2002, the Commission issued Orders approving Xcel Energy's wind power purchase agreements with Chanarambie Power Partners, LLC and Navitas Energy, LLC (now Moraine Wind, LLC) in Docket Nos. E002/M-00-622 and E002/M-02-51. In addition to approving the power purchase agreements, the Commission required the Company to report the date, length, cost to ratepayers, and reason for each transmission constraint curtailment with these two contracts in the monthly FCA filing and summarize such events in the Company's AAA reports.

Similar reporting requirements were instituted by the Commission in approving other wind energy power purchase agreements.² The Company has now been providing wind curtailment reporting in its monthly FCA reports for more than nine years, beginning with the May FCA report dated April 28, 2004.

Additionally, the Commission's Order of April 4, 2006 regarding curtailment payments to wind developers introduced a new element to the regulatory review of wind power purchases—projection of curtailment costs given existing and planned wind-generated energy purchases and the transmission system.

Part H, Section 5, Schedule 1 contains a summary of wind production and curtailment payments during the period July 1, 2012 through June 30, 2013.

Part H, Section 5, Schedule 2 contains an explanation of the factors affecting wind curtailment costs for the 2012-13 AAA reporting period, and our projection of expenses associated with wind curtailment for the next five years. The actual curtailment expenses will depend on the wind resource experienced at each turbine, the timing of outages of existing transmission facilities and construction of additional transmission facilities, and the operation of wind generators as Dispatchable Intermittent Resources (DIR) in the MISO energy market.

² See Docket No. E002/M-04-404, Order dated October 4, 2004 (approving the Ivanhoe PPA); Docket No. E002/M-04-864, Order dated December 29, 2004 (Velva Windfarm, LLC); Docket Nos. E002/M-05-1850 and E002/M-05-1934, Orders dated March 31, 2006 (Fenton Power Partners I, LLC and FPL Energy-Mower County, LLC); and Docket No. E002/M-06-85, Order dated May 3, 2006 (MinnDakota Wind, LLC).

Northern States Power Company, a Minnesota Corporation
 Electric Utility - State of Minnesota
 Wind Curtailment Summary Report - Total
 For January 2011 to June 2013

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Production Month	Date Paid		Wind Production Delivered		Lost Production		Total Xcel Energy Paid
	Delivered MWh	Lost MWh	MWh Delivered	Amount Xcel Energy Paid	Lost MWh	Amount Xcel Energy Paid	
Jan-11			239,411.00	\$ 8,676,834.19	267.00	\$ 8,351.76	\$ 8,685,185.95
Feb-11			326,190.00	\$ 11,747,659.76	773.00	\$ 57,675.95	\$ 11,805,335.71
Mar-11			255,473.00	\$ 9,316,894.81	610.00	\$ 40,590.21	\$ 9,357,485.02
Apr-11			297,277.00	\$ 10,864,661.59	1,509.00	\$ 39,572.53	\$ 10,904,234.12
May-11			343,744.00	\$ 12,572,880.21	835.00	\$ 23,328.17	\$ 12,596,208.38
Jun-11			232,308.00	\$ 8,516,577.54	1,866.00	\$ 61,634.26	\$ 8,578,211.80
Jul-11			119,596.00	\$ 4,505,969.05		\$ -	\$ 4,505,969.05
Aug-11			117,329.00	\$ 4,423,990.73		\$ -	\$ 4,423,990.73
Sep-11			151,285.00	\$ 5,707,654.58	1,193.00	\$ 89,861.72	\$ 5,797,516.30
Oct-11			287,994.00	\$ 10,754,830.25	4,005.00	\$ 286,767.88	\$ 11,041,598.13
Nov-11			352,305.00	\$ 13,026,825.89	4,513.00	\$ 119,854.75	\$ 13,146,680.64
Dec-11			310,452.00	\$ 11,508,448.55	4,548.00	\$ 119,829.84	\$ 11,628,278.39
Total-11			3,033,364.00	\$ 111,623,227.15	20,119.00	\$ 847,467.07	\$ 112,470,694.22
Jan-12			335,526.00	\$ 12,536,927.57	4,030.00	\$ 116,974.23	\$ 12,653,901.80
Feb-12			244,220.00	\$ 9,187,953.18	3,988.00	\$ 165,745.67	\$ 9,353,698.85
Mar-12			301,682.00	\$ 11,350,417.71	19,268.00	\$ 803,845.60	\$ 12,154,263.31
Apr-12			291,648.00	\$ 11,139,119.45	2,702.00	\$ 152,377.25	\$ 11,291,496.70
May-12			309,224.00	\$ 11,442,635.78	122.00	\$ 6,458.62	\$ 11,449,094.40
Jun-12			210,288.00	\$ 8,053,395.50	9,340.00	\$ 390,096.91	\$ 8,443,492.41
Jul-12			177,626.00	\$ 6,182,632.10	462.00	\$ 33,265.99	\$ 6,215,898.09
Aug-12			181,377.00	\$ 6,374,121.17	17.00	\$ 1,295.84	\$ 6,375,417.01
Sep-12			206,370.00	\$ 7,782,666.44	2,557.00	\$ 67,283.71	\$ 7,849,950.15
Oct-12			335,336.00	\$ 12,417,958.94	1,948.00	\$ 51,372.40	\$ 12,469,331.34
Nov-12			307,913.00	\$ 11,527,917.99	9,747.00	\$ 273,272.68	\$ 11,801,190.67
Dec-12			245,543.00	\$ 9,222,118.38	7,050.00	\$ 231,275.35	\$ 9,453,393.73
Total-12			3,146,753.00	\$ 117,217,864.21	61,231.00	\$ 2,293,264.25	\$ 119,511,128.46
Jan-13			305,108.00	\$ 11,376,364.24	2,802.00	\$ 81,950.31	\$ 11,458,314.55
Feb-13			239,212.00	\$ 8,894,954.58	1,378.00	\$ 49,242.95	\$ 8,944,197.53
Mar-13			239,930.00	\$ 8,917,272.36	1,760.00	\$ 51,743.16	\$ 8,969,015.52
Apr-13			280,663.00	\$ 10,376,724.07	9,441.00	\$ 275,668.57	\$ 10,652,392.64
May-13			278,045.00	\$ 10,428,422.75	6,670.00	\$ 185,120.80	\$ 10,613,543.55
Jun-13			204,228.00	\$ 7,651,831.34	4,125.00	\$ 132,266.57	\$ 7,784,097.91
Jul-13				\$ -		\$ -	\$ -
Aug-13				\$ -		\$ -	\$ -
Sep-13				\$ -		\$ -	\$ -
Oct-13				\$ -		\$ -	\$ -
Nov-13				\$ -		\$ -	\$ -
Dec-13				\$ -		\$ -	\$ -
Total-13			1,547,186.00	\$ 57,645,569.34	26,176.00	\$ 775,992.36	\$ 58,421,561.70

Northern States Power Company, a Minnesota Corporation
Electric Utility - State of Minnesota
Wind Curtailment Summary Report - Curtailment Reason Code 1 (ATC)
For January 2011 to June 2013

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Schedule 1

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Production Month	Date Paid		Wind Production Delivered		Lost Production		Total Xcel Energy Paid
	Delivered MWh	Lost MWh	MWh Delivered	Amount Xcel Energy Paid	Lost MWh	Amount Xcel Energy Paid	
Jan-11			0.00	\$ -	0.00	\$ -	
Feb-11			57,568.00	\$ 2,245,157.07	773.00	\$ 57,675.95	\$ 2,302,833.02
Mar-11			46,207.00	\$ 1,802,060.91	481.00	\$ 35,869.38	\$ 1,837,930.29
Apr-11			0.00	\$ -	0.00	\$ -	
May-11			0.00	\$ -	0.00	\$ -	
Jun-11			0.00	\$ -	0.00	\$ -	
Jul-11			0.00	\$ -	0.00	\$ -	
Aug-11			0.00	\$ -	0.00	\$ -	
Sep-11			0.00	\$ -	0.00	\$ -	
Oct-11			0.00	\$ -	0.00	\$ -	
Nov-11			0.00	\$ -	0.00	\$ -	
Dec-11			0.00	\$ -	0.00	\$ -	
Total-11			103,775.00	\$ 4,047,217.98	1,254.00	\$ 93,545.33	\$ 4,140,763.31
Jan-12			0.00	\$ -	0.00	\$ -	
Feb-12			0.00	\$ -	0.00	\$ -	
Mar-12			0.00	\$ -	0.00	\$ -	
Apr-12			0.00	\$ -	0.00	\$ -	
May-12			0.00	\$ -	0.00	\$ -	
Jun-12			0.00	\$ -	0.00	\$ -	
Jul-12			0.00	\$ -	0.00	\$ -	
Aug-12			0.00	\$ -	0.00	\$ -	
Sep-12			0.00	\$ -	0.00	\$ -	
Oct-12			0.00	\$ -	0.00	\$ -	
Nov-12			0.00	\$ -	0.00	\$ -	
Dec-12			0.00	\$ -	0.00	\$ -	
Total-12							
Jan-13			0.00	\$ -	0.00	\$ -	
Feb-13			0.00	\$ -	0.00	\$ -	
Mar-13			0.00	\$ -	0.00	\$ -	
Apr-13			188.19	\$ 5,017.07	32.00	\$ 853.20	\$ 5,870.27
May-13			0.00	\$ -	0.00	\$ -	
Jun-13			0.00	\$ -	0.00	\$ -	
Jul-13			0.00	\$ -	0.00	\$ -	
Aug-13			0.00	\$ -	0.00	\$ -	
Sep-13			0.00	\$ -	0.00	\$ -	
Oct-13			0.00	\$ -	0.00	\$ -	
Nov-13			0.00	\$ -	0.00	\$ -	
Dec-13			0.00	\$ -	0.00	\$ -	
Total-13			188.19	\$ 5,017.07	32.00	\$ 853.20	\$ 5,870.27

Northern States Power Company, a Minnesota Corporation

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Electric Utility - State of Minnesota

Part H Section 5

Wind Curtailment Summary Report - Curtailment Reason Code 2 (Low Load)

Schedule 1

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Production Month	Date Paid		Wind Production Delivered		Lost Production		Total Xcel Energy Paid
	Delivered MWh	Lost MWh	MWh Delivered	Amount Xcel Energy Paid	Lost MWh	Amount Xcel Energy Paid	
Jan-11			0.00	\$ -	0.00	\$ -	
Feb-11			0.00	\$ -	0.00	\$ -	
Mar-11			0.00	\$ -	0.00	\$ -	
Apr-11			0.00	\$ -	0.00	\$ -	
May-11			0.00	\$ -	0.00	\$ -	
Jun-11			0.00	\$ -	0.00	\$ -	
Jul-11			0.00	\$ -	0.00	\$ -	
Aug-11			0.00	\$ -	0.00	\$ -	
Sep-11			0.00	\$ -	0.00	\$ -	
Oct-11			0.00	\$ -	0.00	\$ -	
Nov-11			0.00	\$ -	0.00	\$ -	
Dec-11			0.00	\$ -	0.00	\$ -	
Total-11							
Jan-12			0.00	\$ -	0.00	\$ -	
Feb-12			0.00	\$ -	0.00	\$ -	
Mar-12			0.00	\$ -	0.00	\$ -	
Apr-12			0.00	\$ -	0.00	\$ -	
May-12			0.00	\$ -	0.00	\$ -	
Jun-12			0.00	\$ -	0.00	\$ -	
Jul-12			0.00	\$ -	0.00	\$ -	
Aug-12			0.00	\$ -	0.00	\$ -	
Sep-12			0.00	\$ -	0.00	\$ -	
Oct-12			0.00	\$ -	0.00	\$ -	
Nov-12			0.00	\$ -	0.00	\$ -	
Dec-12			0.00	\$ -	0.00	\$ -	
Total-12							
Jan-13			0.00	\$ -	0.00	\$ -	
Feb-13			0.00	\$ -	0.00	\$ -	
Mar-13			0.00	\$ -	0.00	\$ -	
Apr-13			0.00	\$ -	0.00	\$ -	
May-13			0.00	\$ -	0.00	\$ -	
Jun-13			0.00	\$ -	0.00	\$ -	
Jul-13			0.00	\$ -	0.00	\$ -	
Aug-13			0.00	\$ -	0.00	\$ -	
Sep-13			0.00	\$ -	0.00	\$ -	
Oct-13			0.00	\$ -	0.00	\$ -	
Nov-13			0.00	\$ -	0.00	\$ -	
Dec-13			0.00	\$ -	0.00	\$ -	
Total-13							

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 Wind Curtailment Summary Report - Curtailment Reason Code 3 (MISO)
 For January 2011 to June 2013

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Production Month	Date Paid		Wind Production Delivered		Lost Production		Total Xcel Energy Paid
	Delivered MWh	Lost MWh	MWh Delivered	Amount Xcel Energy Paid	Lost MWh	Amount Xcel Energy Paid	
Jan-11			22,149.00	\$ 856,883.93	27.00	\$ 2,057.98	\$ 858,941.91
Feb-11			0.00	\$ -	0.00	\$ -	
Mar-11			12,099.00	\$ 435,805.98	129.00	\$ 4,720.83	\$ 440,526.81
Apr-11			0.00	\$ -	0.00	\$ -	
May-11			35,657.00	\$ 1,379,462.65	29.00	\$ 2,194.34	\$ 1,381,656.99
Jun-11			40,743.00	\$ 1,588,966.00	259.00	\$ 19,494.89	\$ 1,608,460.89
Jul-11			0.00	\$ -	0.00	\$ -	
Aug-11			0.00	\$ -	0.00	\$ -	
Sep-11			32,077.00	\$ 1,250,994.03	1,193.00	\$ 89,861.72	\$ 1,340,855.75
Oct-11			53,795.00	\$ 2,098,019.04	3,702.00	\$ 278,749.03	\$ 2,376,768.07
Nov-11			112,206.00	\$ 4,087,900.02	1,030.00	\$ 27,795.75	\$ 4,115,695.77
Dec-11			27,020.00	\$ 708,453.10	1,774.00	\$ 46,508.84	\$ 754,961.94
Total-11			335,746.00	\$ 12,406,484.75	8,143.00	\$ 471,383.38	\$ 12,877,868.13
Jan-12			18,934.00	\$ 692,996.48	222.00	\$ 16,454.79	\$ 709,451.27
Feb-12			13,504.00	\$ 494,255.92	1,266.00	\$ 93,836.79	\$ 588,092.71
Mar-12			67,082.00	\$ 1,987,960.78	14,707.00	\$ 622,334.14	\$ 2,610,294.92
Apr-12			114,891.00	\$ 4,138,756.16	2,203.00	\$ 139,189.40	\$ 4,277,945.56
May-12			153,608.00	\$ 5,779,438.35	122.00	\$ 6,458.62	\$ 5,785,896.97
Jun-12			151,432.00	\$ 5,375,077.52	9,340.00	\$ 390,096.91	\$ 5,765,174.43
Jul-12			80,870.00	\$ 3,153,654.88	462.00	\$ 33,265.99	\$ 3,186,920.87
Aug-12			42,299.00	\$ 1,722,821.04	17.00	\$ 1,295.84	\$ 1,724,116.88
Sep-12			33,815.00	\$ 890,266.94	2,557.00	\$ 67,283.71	\$ 957,550.65
Oct-12			59,696.00	\$ 1,571,485.46	1,690.00	\$ 44,612.74	\$ 1,616,098.20
Nov-12			82,660.00	\$ 2,849,401.90	9,747.00	\$ 273,272.68	\$ 3,122,674.58
Dec-12			97,045.00	\$ 3,240,302.99	7,025.00	\$ 230,618.06	\$ 3,470,921.05
Total-12			915,836.00	\$ 31,896,418.42	49,358.00	\$ 1,918,719.67	\$ 33,815,138.09
Jan-13			72,450.00	\$ 2,082,854.97	2,802.00	\$ 81,950.31	\$ 2,164,805.28
Feb-13			114,478.00	\$ 4,430,834.71	1,378.00	\$ 49,242.95	\$ 4,480,077.66
Mar-13			78,321.00	\$ 2,928,820.36	1,760.00	\$ 51,743.16	\$ 2,980,563.52
Apr-13			130,127.81	\$ 4,457,930.86	9,409.00	\$ 274,815.37	\$ 4,732,746.23
May-13			117,140.00	\$ 4,538,005.21	6,670.00	\$ 185,120.80	\$ 4,723,126.01
Jun-13			81,225.00	\$ 2,885,843.62	4,125.00	\$ 132,266.57	\$ 3,018,110.19
Jul-13			0.00	\$ -	0.00	\$ -	
Aug-13			0.00	\$ -	0.00	\$ -	
Sep-13			0.00	\$ -	0.00	\$ -	
Oct-13			0.00	\$ -	0.00	\$ -	
Nov-13			0.00	\$ -	0.00	\$ -	
Dec-13			0.00	\$ -	0.00	\$ -	
Total-13			593,741.81	\$ 21,324,289.73	26,144.00	\$ 775,139.16	\$ 22,099,428.89

Northern States Power Company, a Minnesota Corporation
 Electric Utility - State of Minnesota
 Wind Curtailment Summary Report - Curtailment Reason Code 4 (Other-Paid)
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Production Month	Date Paid		Wind Production Delivered		Lost Production		Total Xcel Energy Paid
	Delivered MWh	Lost MWh	MWh Delivered	Amount Xcel Energy Paid	Lost MWh	Amount Xcel Energy Paid	
Jan-11			22,160.00	\$ 581,025.26	240.00	\$ 6,293.78	\$ 587,319.04
Feb-11			0.00	\$ -	0.00	\$ -	
Mar-11			0.00	\$ -	0.00	\$ -	
Apr-11			26,143.00	\$ 685,468.15	1,509.00	\$ 39,572.53	\$ 725,040.68
May-11			29,659.00	\$ 777,649.62	806.00	\$ 21,133.83	\$ 798,783.45
Jun-11			18,954.00	\$ 496,981.88	1,607.00	\$ 42,139.37	\$ 539,121.25
Jul-11			0.00	\$ -	0.00	\$ -	
Aug-11			0.00	\$ -	0.00	\$ -	
Sep-11			0.00	\$ -	0.00	\$ -	
Oct-11			32,929.00	\$ 867,705.00	303.00	\$ 8,018.85	\$ 875,723.85
Nov-11			30,254.00	\$ 799,620.41	3,483.00	\$ 92,059.00	\$ 891,679.41
Dec-11			28,115.00	\$ 743,086.14	2,774.00	\$ 73,321.00	\$ 816,407.14
Total-11			188,214.00	\$ 4,951,536.46	10,722.00	\$ 282,538.36	\$ 5,234,074.82
Jan-12			56,759.00	\$ 1,494,358.14	3,808.00	\$ 100,519.44	\$ 1,594,877.58
Feb-12			36,420.00	\$ 959,546.23	2,722.00	\$ 71,908.88	\$ 1,031,455.11
Mar-12			72,201.00	\$ 2,940,750.27	4,561.00	\$ 181,511.46	\$ 3,122,261.73
Apr-12			0.00	\$ -	499.00	\$ 13,187.85	\$ 13,187.85
May-12			0.00	\$ -	0.00	\$ -	
Jun-12			0.00	\$ -	0.00	\$ -	
Jul-12			0.00	\$ -	0.00	\$ -	
Aug-12			0.00	\$ -	0.00	\$ -	
Sep-12			0.00	\$ -	0.00	\$ -	
Oct-12			0.00	\$ -	258.00	\$ 6,759.66	\$ 6,759.66
Nov-12			0.00	\$ -	0.00	\$ -	
Dec-12			0.00	\$ -	25.00	\$ 657.29	\$ 657.29
Total-12			165,380.00	\$ 5,394,654.64	11,873.00	\$ 374,544.58	\$ 5,769,199.22
Jan-13			0.00	\$ -	0.00	\$ -	
Feb-13			0.00	\$ -	0.00	\$ -	
Mar-13			0.00	\$ -	0.00	\$ -	
Apr-13			0.00	\$ -	0.00	\$ -	
May-13			0.00	\$ -	0.00	\$ -	
Jun-13			0.00	\$ -	0.00	\$ -	
Jul-13			0.00	\$ -	0.00	\$ -	
Aug-13			0.00	\$ -	0.00	\$ -	
Sep-13			0.00	\$ -	0.00	\$ -	
Oct-13			0.00	\$ -	0.00	\$ -	
Nov-13			0.00	\$ -	0.00	\$ -	
Dec-13			0.00	\$ -	0.00	\$ -	
Total-13							

2013 CURTAILMENT REPORT

I. INTRODUCTION

The Commission's April 4, 2006 Order regarding curtailment payments to wind developers (Docket No. E999/AA-04-1279) requires the Company to provide in future Annual Automatic Adjustment reports a projection of wind generation curtailment costs given existing and planned wind-generated energy purchases and transmission system needs. 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.

II. CURTAILMENT UPDATE

The Company expects that some level of wind curtailment from Power Purchase Agreement (PPA) facilities will occur during the foreseeable future. The reasons driving the curtailment are starting to shift from almost exclusively transmission system constraints in southwestern Minnesota to a combination of transmission system constraints and negative Locational Marginal Pricing (LMP).

Significant transmission improvements in southwestern Minnesota have been completed and, consequently, future curtailment in this area will occur primarily during prior outage conditions. Curtailment, however, will also occur during system intact conditions due to regional system congestion resulting in negative LMP in the Midcontinent Independent System Operator (MISO)¹ energy market.

In this regard, MISO and the industry have implemented Dispatchable Intermittent Resources (DIR) that will result in better management of the wind resources and will deliver savings for ratepayers. Under this system, a number of PPA wind facilities have been registered with MISO as DIR. DIR facilities will be given set point instructions every five minutes and will rely on Automated Generation Control (AGC) technology, which will automatically control wind project output. DIR will allow wind generators to be operated more like traditional generating facilities and, as a result, MISO will be able to more quickly and accurately respond to system conditions. Manual curtailment of non-DIR PPA wind facilities will also be used to manage the wind resources.

¹ MISO was formerly named the Midwest Independent Transmission System Operator, Inc. The name change was effective April 28, 2013.

The existing PPA wind facilities associated with this report that are registered and will be operated as DIR are listed in the following table.

Table 1
Dispatchable Intermittent Resources

Wind Project	MW
Fenton	200
MinnDakota	150
Mower County	100
Moraine II	50

The existing feral Production Tax Credit (PTC) is scheduled to expire on December 31, 2013. In the past, the uncertainty of PTC expiration was closely connected with increases in wind curtailment, since wind projects were put into service to meet PTC eligibility requirements even though the necessary transmission upgrades were not completed. This will also be the case with the pending PTC expiration, but curtailment impacts will likely be delayed since the requirements for meeting the present PTC do not require the wind projects to go into service by December 31, 2013, but only to show progress towards completion.² The actual in-service dates of many of these wind projects will be delayed into 2014 and 2015. This delay will allow completion of a portion of the necessary transmission upgrades and reduce curtailment impacts. The Company is aware of around 2,000 MW of additional wind generation in Minnesota, North Dakota and Iowa that will be added in the 2014 to 2015 timeframe, including 750 MW of Company-owned and PPA wind facilities.³ In addition, close to 1,500 MW of wind generation has recently gone into service in the surrounding areas.⁴ The required transmission upgrades for these wind projects will likely not all be in service by the time the projects begin producing energy. This will have an effect on LMP pricing in the MISO regional energy market that could

² On January 2, 2013, Congress temporarily extended the PTC for wind. The PTC extension includes a new provision that allows wind and other eligible renewable energy projects that begin construction in 2013 to qualify for the credit. Previous law required eligible projects to be in-service and operating by the end of the calendar year when the credit was set to expire.

³ MidAmerican Energy Company has announced it will add up to 1,050 megawatts of wind generation in Iowa by year-end 2015. Minnesota Power also announced plans to add 200 MW of wind generation in North Dakota by year-end 2014.

⁴ These projects include G540/G548 (160 MW); G573/G574/G575 (200 MW); G735/J091 (266 MW); G798 (150 MW); G947 (99 MW); H008 (36 MW); H009 (150 MW); H021 (138.6 MW); H096 (50 MW); J191/R65 (193.2 MW); J201 (20 MW); and R49 (12 MW).

potentially impact real-time wind generation on the NSPM System. This potential impact will lessen as the required transmission facilities are placed in service.

III. Transmission System Improvements

Since 1994, the Company's wind energy purchases have been the dominant factor in determining the need for transmission infrastructure improvements in southwestern Minnesota. To meet this need, the Company, often in cooperation with other utilities, has planned, engineered and constructed a number of projects designed to increase the transmission capacity in that area. 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.

Table 2
Southwest Minnesota Wind Limits

Transmission Project	Wind Outlet Increase	SW MN Wind Limit
425 MW Wind Transmission Expansion Project	October 2004 ⁵	425 MW
825 MW Wind Transmission Expansion Project	December 2007 ⁶	880 MW
Buffalo Ridge Incremental Generation Outlet (BRIGO)	December 2009 ⁷	1250 MW

The Company is participating in the development of the CapX2020 transmission projects (CapX) which include a number of projects that will positively impact transmission capacity and wind curtailment on the NSP system. These CapX transmission projects are listed in the following table.

⁵ Completion of a majority of 425MW transmission facilities, and creation of the SW MN Wind operating guide, allowed the increase of the SW MN Wind limit to 425 MW in October 2004. All 425 MW transmission facilities were completed in December 2006.

⁶ Completion of a majority of 825 MW transmission facilities, and update to the SW MN Wind operating guide, allowed the increase to SW MN Wind limit to 880 MW in December 2007. All 825 MW transmission facilities were completed in June 2008.

⁷ With the completion of the BRIGO facilities, the southwest Minnesota operating guide will no longer use a total SW MN 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.

Table 3
CapX Transmission Projects

Transmission Project	Transmission Owner	Planned In-Service Date⁸
CapX Brookings County - Southeast Twin Cities 345 kV Line	Xcel Energy, Great River Energy	Early 2015
CapX - Fargo North Dakota - Northwest Twin Cities 345 kV Line	Xcel Energy, Great River Energy	Early 2015
CapX - Southeast Twin Cities - LaCrosse, Wisconsin 345 kV Line	Xcel Energy, SMP and non-MISO	Late 2015

The CapX transmission lines will increase the capacity of the bulk power transmission system and thus remove impediments to the delivery of power from wind farms around the region. The CapX Brookings County to Twin Cities 345 kV line is expected to increase the transmission limit in southwest Minnesota to 1,950 MW when it is completed in 2015.

In addition to transmission projects developed by the Company, MISO has identified and approved 242 new transmission infrastructure projects including 17 Multi-Value Projects (MVPs) which are designed to accommodate the planned and expected generation expansion in the MISO footprint.⁹ The MVP projects, particularly the ones listed in the following table, will have a positive impact on Company-owned and PPA wind facilities.

⁸ The planned in-service dates were obtained from MISO's Transmission Expansion Plan 2012 (MTEP12) and are subject to change.

⁹ The MISO Board of Directors approved the new transmission projects, which included the CapX Brookings County – Southeast Twin Cities 345 kV line as a MVP, on December 13, 2012. The additional 242 new projects approved in MTEP12 increases the total number of MISO supported projects to 598, representing an expected future investment of \$10.8 billion through 2022.

Table 4
MVP Projects

Transmission Project	Transmission Owner	Planned In-Service Date
Pleasant Prairie - Zion Energy Center 345 kV Line	American Transmission Company	Late 2013
Winco to Hazleton 345 kV Line	MidAmerica Energy, ITC Midwest	End 2015
Lakefield Jct. - Winnebago - Winco - Kossuth County & Obrien Coutny - Kossuth County - Webster 345 kV Line	MidAmerica Energy, ITC Midwest	End 2016
Big Stone South to Brookings 345 kV Line	Ottertail Power Company, Xcel Energy	End 2017
Ellendale to Big Stone South 345 kV Line	Ottertail Power Company, Montana Dakota Utilities	End 2019
North LaCrosse - North Madison- Cardinal - Spring Green - Dubuque area 345 kV Line	American Transmission Company, Xcel Energy, ITC Midwest	End 2020

IV. Wind Generation and Curtailment Projections

Chart 1 shows Company-owned and PPA wind generation facilities throughout the NSP service territory on an incremental and cumulative basis through the end of calendar year 2013, along with wind purchases for projects on-line or scheduled to come on-line through 2015.

CHART 1

NSP Wind Development
 (1993 - 2012 Actual, 2013 - 2015 Scheduled)

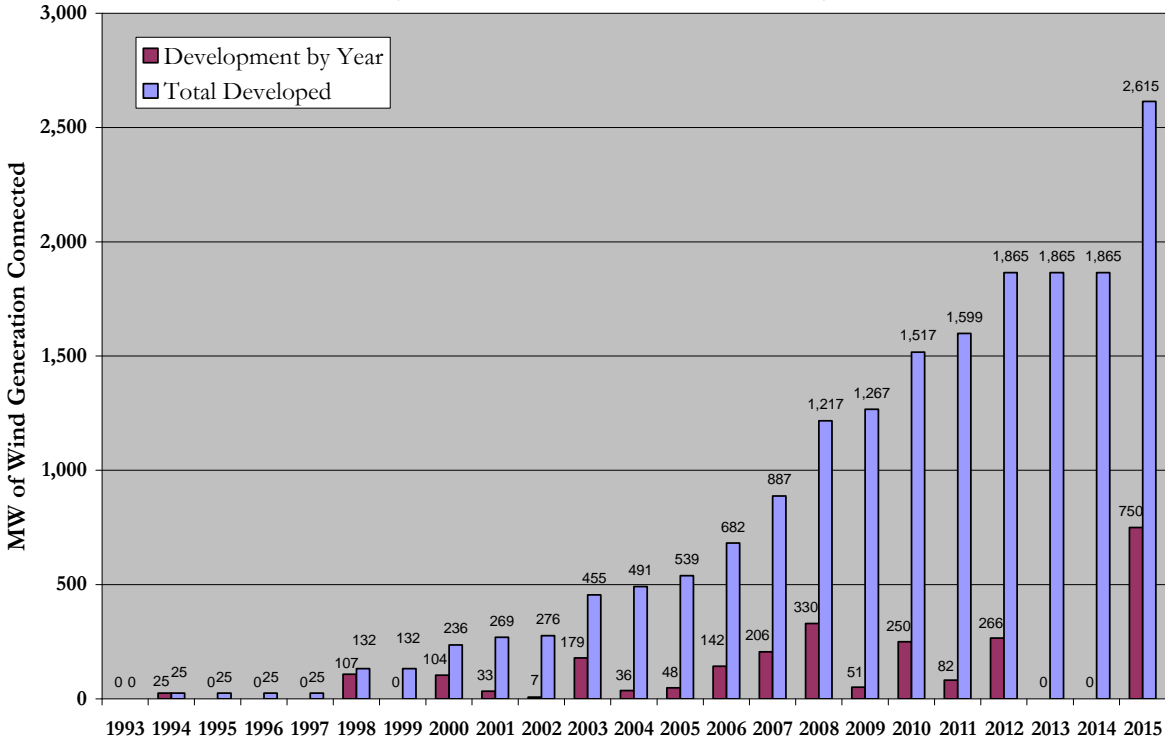
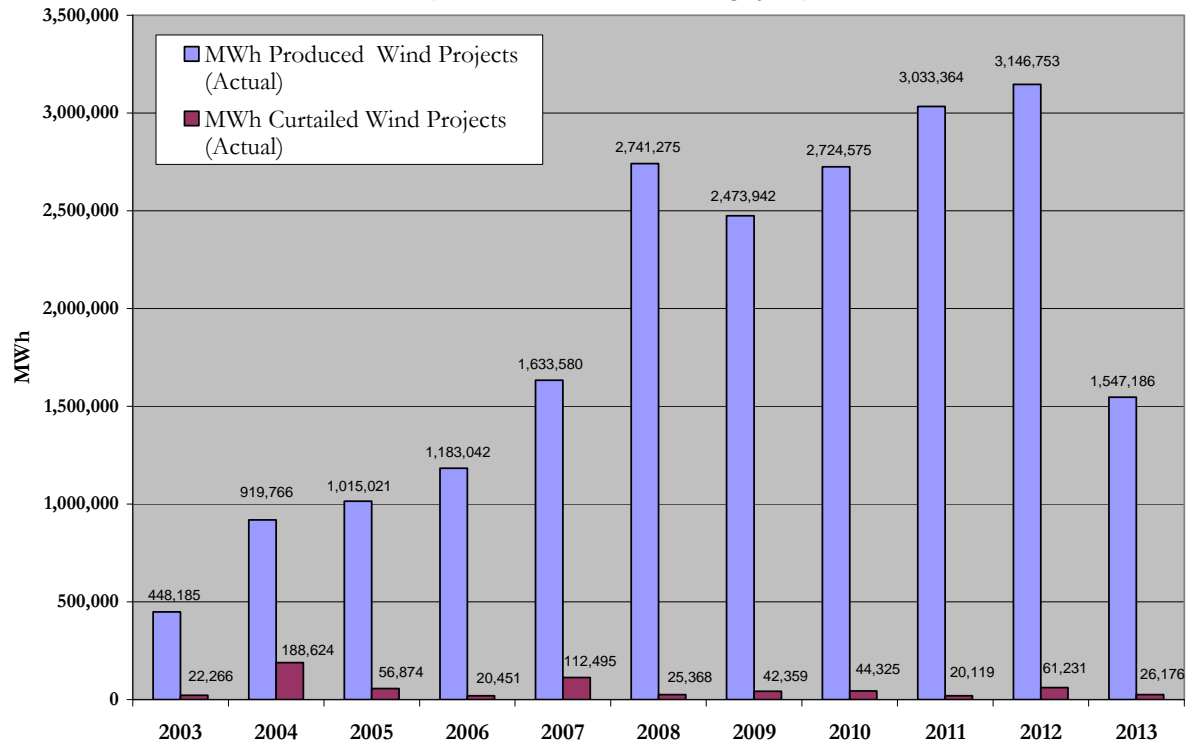


Chart 2 shows the comparison between total wind energy produced and the wind energy curtailed from the projects through June, 2013. Despite the lead/lag time associated with generation and transmission development, Chart 2 shows that wind curtailment is small compared to total wind generation delivered. 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 825 MW Wind Transmission Expansion Project, along with bringing the Fenton and MinnDakota Projects on-line in order to take advantage of the then-expiring PTC.

Chart 2

Wind Production & Curtailment (MWh)

(Note: 2013 Partial Year through June)



During 2011, curtailment was primarily driven by planned and unplanned transmission facility outages, including those caused by equipment failures on substation feeders in southwest Minnesota that resulted in reductions in area transmission capacity. A severe storm on July 1, 2011 significantly damaged a number of transmission facilities and wind farms on the Buffalo Ridge. Damage to 34.5 kV collector system facilities and a 115 kV transmission line prevented delivery of approximately 300 MW of wind generation to our transmission system, and also prevented transmission of approximately 1,200 MW of wind generation. The Company declared a Force Majeure event, and curtailment related to the storm was not compensated. As a result, such curtailment is not included in the Chart 2 totals. The Company completed the Buffalo Ridge Restoration Project, including the replacement and upgrade of the 115 kV and 34.5 kV facilities in April 2012, at a cost of approximately \$38 million.

Curtailment during 2012 and through June 2013 was driven by a combination of negative LMP and transmission facility outages in southwest Minnesota.

Chart 3 shows the corresponding production and curtailment costs through June, 2013.

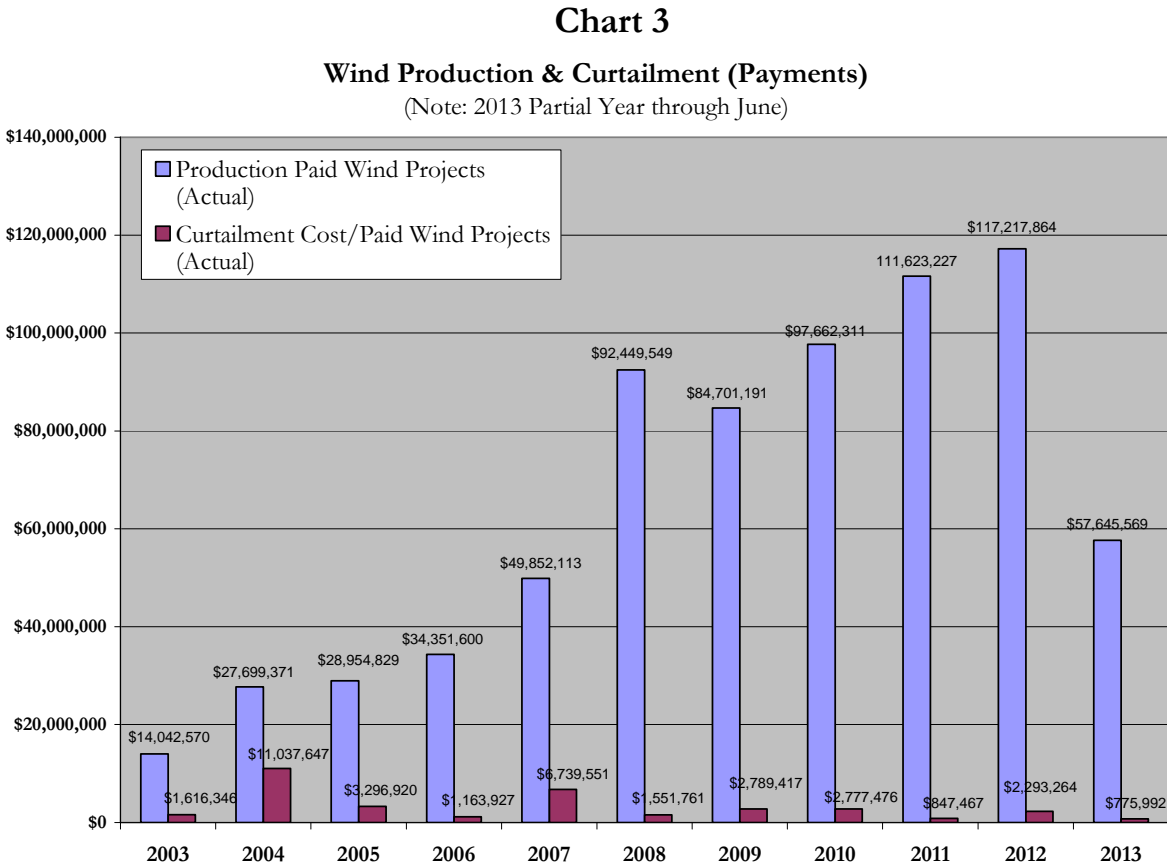
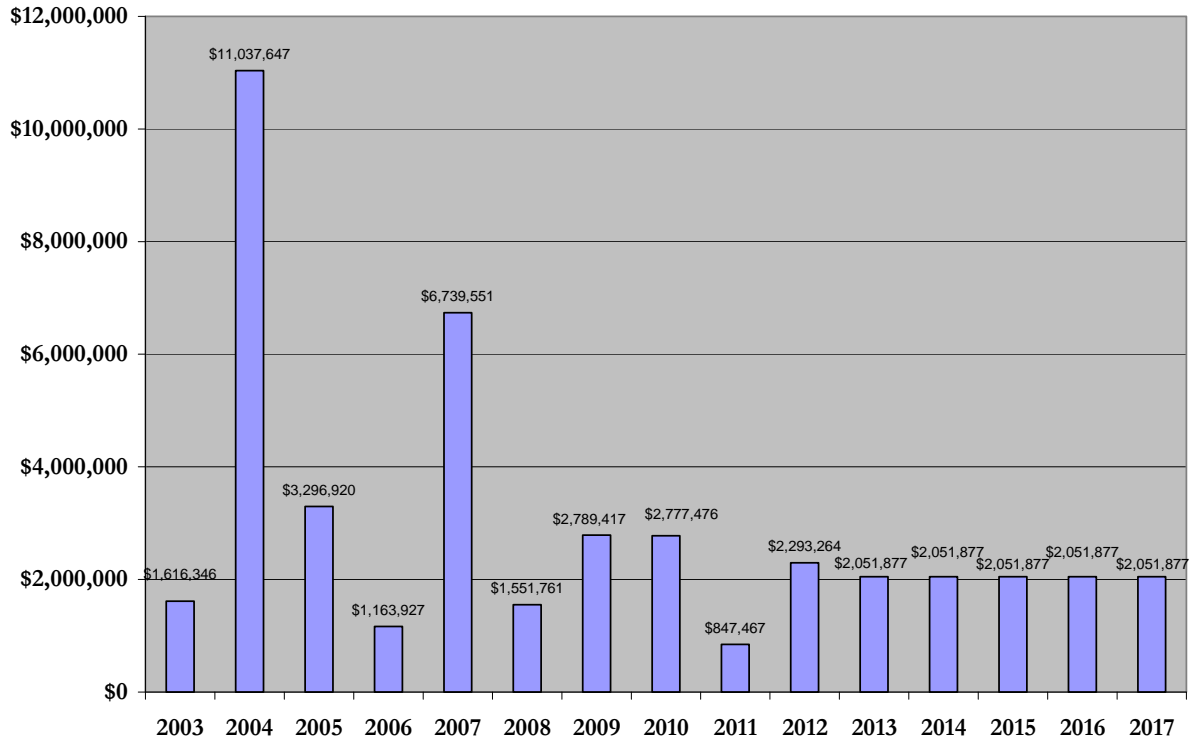


Chart 4 shows the Company’s historical wind curtailment costs along with the five-year estimate of future costs. Over the next five years, we anticipate that the wind generation curtailment and associated payments to vendors will result from planned and unplanned transmission outages and negative LMP prices.

Chart 4

Wind Curtailment Payments
 (2003-2012 Actual; 2013 - 2017 Projected)



In prior curtailment reports, the Company focused on curtailment associated with maintaining transmission reliability during system intact conditions and did not attempt to estimate curtailment associated with MISO negative LMP events or transmission outages because of the uncertainty surrounding their frequency and duration. Going forward, the Company has attempted to provide a value to this future curtailment.

The Company believes that using historical data is a reasonable methodology for estimating future wind curtailment. The Company used the average of the 2008 through 2012 historical curtailment to predict future year curtailment. The basis for moving to this type of curtailment estimate was that in 2008, the transmission infrastructure caught up with wind generation development and curtailment became more consistent. For this reason, the average of the curtailment for the years 2008 through 2012 was used.

VI. CONCLUSION

The Company anticipates that wind generation curtailment and associated payment to vendors will occur over the next five years as the result of transmission capacity reductions caused by planned and unplanned transmission outages and negative LMP in the MISO energy market. System conditions and wind project development are very dynamic and actual curtailment may vary from that projected in this report. We will continue to refine and gather information for use in future updates to be submitted with subsequent AAA reports.