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, 2013 through June 30, 2014.

Part H, Section 5, Schedule 2 contains an explanation of the factors affecting wind curtailment costs for the 2013-14 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.

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[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
Electric Operations - State of Minnesota
Wind Curtailment Summary Report - Total
For January 2012 to June 2014

	Date Paid		Wind Production Delivered		Lost Production		
Production Month	Delivered MWh	Lost MWh	MWh Delivered	Amount Xcel Energy Paid	Lost MWh	Amount Xcel Energy Paid	Total Xcel Energy Paid
Jan-12			355,618.00	$ 13,868,035.08	4,030.00	$ 116,974.23	$ 13,985,009.31
Feb-12			259,389.00	$ 10,190,999.08	3,988.00	$ 165,745.67	$ 10,356,744.75
Mar-12			320,659.00	$ 12,606,840.59	19,268.00	$ 803,845.60	$ 13,410,686.19
Apr-12			338,680.00	$ 13,143,371.15	3,213.00	$ 165,776.72	$ 13,309,147.87
May-12			326,203.00	$ 12,609,124.67	293.00	$ 10,935.95	$ 12,620,060.62
Jun-12			249,449.00	$ 9,623,034.24	9,401.00	$ 391,704.20	$ 10,014,738.44
Jul-12			175,134.00	$ 6,780,690.55	464.00	$ 33,319.74	$ 6,814,010.29
Aug-12			181,166.00	$ 7,040,037.00	51.00	$ 2,177.36	$ 7,042,214.36
Sep-12			221,713.00	$ 8,656,007.12	2,674.00	$ 70,346.21	$ 8,726,353.33
Oct-12			354,262.00	$ 13,665,856.74	2,280.00	$ 60,072.98	$ 13,725,929.72
Nov-12			352,458.00	$ 13,354,374.89	10,145.00	$ 283,709.03	$ 13,638,083.92
Dec-12			312,094.00	$ 11,742,333.22	7,296.00	$ 237,726.52	$ 11,980,059.74
Total-12			3,446,825.00	$ 133,280,704.33	63,103.00	$ 2,342,334.21	$ 135,623,038.54
Jan-13			407,088.00	$ 15,756,239.33	3,485.00	$ 99,847.03	$ 15,856,086.36
Feb-13			328,299.00	$ 12,658,893.10	2,305.00	$ 77,830.54	$ 12,736,723.64
Mar-13			339,474.00	$ 13,061,501.18	5,915.00	$ 241,878.53	$ 13,303,379.71
Apr-13			367,728.00	$ 14,246,693.15	15,622.00	$ 607,744.64	$ 14,854,437.79
May-13			364,299.00	$ 14,265,577.90	14,849.00	$ 443,050.30	$ 14,708,628.20
Jun-13			278,828.00	$ 10,832,088.81	8,913.00	$ 270,229.36	$ 11,102,318.17
Jul-13			245,238.00	$ 9,328,431.29	1,293.00	$ 62,076.75	$ 9,390,508.04
Aug-13			187,736.00	$ 7,234,198.27	379.00	$ 16,046.59	$ 7,250,244.86
Sep-13			286,753.00	$ 11,147,320.98	36,303.00	$ 1,789,352.32	$ 12,936,673.30
Oct-13			327,801.00	$ 12,672,471.27	80,620.00	$ 4,047,550.61	$ 16,720,021.88
Nov-13			449,800.00	$ 17,508,754.72	52,883.00	$ 1,874,343.43	$ 19,383,098.15
Dec-13			316,518.00	$ 12,295,044.76	41,592.00	$ 1,838,978.11	$ 14,134,022.87
Total-13			3,899,562.00	$ 151,007,214.76	264,159.00	$ 11,368,928.21	$ 162,376,142.97
Jan-14			500,520.00	$ 19,405,424.13	38,688.00	$ 1,728,478.18	$ 21,133,902.31
Feb-14			403,766.00	$ 15,735,069.82	26,447.00	$ 1,132,810.44	$ 16,867,880.26
Mar-14			421,673.00	$ 16,391,996.41	30,611.00	$ 1,217,611.39	$ 17,609,607.80
Apr-14			447,296.00	$ 18,197,697.08	34,445.00	$ 1,308,314.69	$ 19,506,011.77
May-14			341,402.00	$ 13,400,536.13	4,989.00	$ 213,648.70	$ 13,614,184.83
Jun-14				$ -		$ -	
Jul-14				$ -		$ -	
Aug-14				$ -		$ -	
Sep-14				$ -		$ -	
Oct-14				$ -		$ -	
Nov-14				$ -		$ -	
Dec-14				$ -		$ -	
Total-14			2,114,657.00	$ 83,130,723.57	135,180.00	$ 5,600,863.40	$ 88,731,586.97

Northern States Power Company
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Wind Curtailment Summary Report - Curtailment Reason Code 1 (ATC)
For January 2012 to June 2014

Production Month	Date Paid: Delivered MWh	Date Paid: Lost MWh	Wind Production Delivered: MWh Delivered	Wind Production Delivered: Amount Xcel Energy Paid	Lost Production: Lost MWh	Lost Production: Amount Xcel Energy Paid	Total Xcel Energy Paid
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
Jan-14			0.00	$ -	0.00	$ -	
Feb-14			0.00	$ -	0.00	$ -	
Mar-14			0.00	$ -	0.00	$ -	
Apr-14			0.00	$ -	0.00	$ -	
May-14			0.00	$ -	0.00	$ -	
Jun-14			0.00	$ -	0.00	$ -	
Jul-14			0.00	$ -	0.00	$ -	
Aug-14			0.00	$ -	0.00	$ -	
Sep-14			0.00	$ -	0.00	$ -	
Oct-14			0.00	$ -	0.00	$ -	
Nov-14			0.00	$ -	0.00	$ -	
Dec-14			0.00	$ -	0.00	$ -	
Total-14							

Northern States Power Company
Electric Operations - State of Minnesota
Wind Curtailment Summary Report - Curtailment Reason Code 2 (Low Load)
For January 2012 to June 2014

	Date Paid		Wind Production Delivered		Lost Production		
Production Month	Delivered MWh	Lost MWh	MWh Delivered	Amount Xcel Energy Paid	Lost MWh	Amount Xcel Energy Paid	Total Xcel Energy Paid
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			76,548.00	$ 2,901,817.33	838.00	$ 60,482.56	$ 2,962,299.89
Oct-13			0.00	$ -	0.00	$ -	
Nov-13			0.00	$ -	0.00	$ -	
Dec-13			0.00	$ -	0.00	$ -	
Total-13			76,548.00	$ 2,901,817.33	838.00	$ 60,482.56	$ 2,962,299.89
Jan-14			0.00	$ -	0.00	$ -	
Feb-14			0.00	$ -	0.00	$ -	
Mar-14			0.00	$ -	0.00	$ -	
Apr-14			0.00	$ -	0.00	$ -	
May-14			0.00	$ -	0.00	$ -	
Jun-14			0.00	$ -	0.00	$ -	
Jul-14			0.00	$ -	0.00	$ -	
Aug-14			0.00	$ -	0.00	$ -	
Sep-14			0.00	$ -	0.00	$ -	
Oct-14			0.00	$ -	0.00	$ -	
Nov-14			0.00	$ -	0.00	$ -	
Dec-14			0.00	$ -	0.00	$ -	
Total-14							

Northern States Power Company
Electric Operations - State of Minnesota
Wind Curtailment Summary Report - Curtailment Reason Code 3 (MISO)
For January 2012 to June 2014

	Date Paid		Wind Production Delivered		Lost Production		
Production Month	**Delivered MWh**	**Lost MWh**	**MWh Delivered**	**Amount Xcel Energy Paid**	**Lost MWh**	**Amount Xcel Energy Paid**	**Total Xcel Energy Paid**
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	9,401.00	$ 391,704.20	$ 5,766,781.72
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	2,674.00	$ 70,346.21	$ 960,613.15
Oct-12			59,696.00	$ 1,571,485.46	2,022.00	$ 53,313.32	$ 1,624,798.78
Nov-12			82,660.00	$ 2,849,401.90	10,145.00	$ 283,709.03	$ 3,133,110.93
Dec-12			97,045.00	$ 3,240,302.99	7,271.00	$ 237,069.23	$ 3,477,372.22
Total-12			915,836.00	$ 31,896,418.42	50,512.00	$ 1,948,977.56	$ 33,845,395.98
Jan-13			72,450.00	$ 2,082,854.97	3,485.00	$ 99,847.03	$ 2,182,702.00
Feb-13			124,791.00	$ 4,430,834.71	1,606.00	$ 59,496.20	$ 4,490,330.91
Mar-13			130,304.00	$ 3,740,576.42	5,915.00	$ 241,878.53	$ 3,982,454.95
Apr-13			214,542.81	$ 7,835,630.25	15,590.00	$ 606,891.44	$ 8,442,521.69
May-13			172,368.00	$ 6,676,131.24	14,849.00	$ 443,050.30	$ 7,119,181.54
Jun-13			121,792.00	$ 4,382,117.43	8,913.00	$ 270,229.36	$ 4,652,346.79
Jul-13			53,096.00	$ 1,642,558.63	980.00	$ 53,881.69	$ 1,696,440.32
Aug-13			37,477.00	$ 1,582,277.95	379.00	$ 16,046.59	$ 1,598,324.54
Sep-13			126,607.00	$ 4,851,723.76	35,465.00	$ 1,728,869.76	$ 6,580,593.52
Oct-13			226,538.00	$ 8,728,293.26	80,620.00	$ 4,047,550.61	$ 12,775,843.87
Nov-13			289,636.00	$ 11,075,512.84	52,883.00	$ 1,874,343.43	$ 12,949,856.27
Dec-13			207,681.00	$ 8,041,172.11	41,592.00	$ 1,838,978.11	$ 9,880,150.22
Total-13			1,777,282.81	$ 65,069,683.57	262,277.00	$ 11,281,063.05	$ 76,350,746.62
Jan-14			370,021.00	$ 14,326,083.51	38,688.00	$ 1,728,478.18	$ 16,054,561.69
Feb-14			289,901.00	$ 11,622,899.51	26,447.00	$ 1,132,810.44	$ 12,755,709.95
Mar-14			296,141.00	$ 11,651,807.13	30,572.00	$ 1,216,455.09	$ 12,868,262.22
Apr-14			238,813.00	$ 9,186,705.24	34,401.00	$ 1,307,039.74	$ 10,493,744.98
May-14			137,551.00	$ 5,259,198.52	4,989.00	$ 213,648.70	$ 5,472,847.22
Jun-14			0.00	$ -	0.00	$ -	
Jul-14			0.00	$ -	0.00	$ -	
Aug-14			0.00	$ -	0.00	$ -	
Sep-14			0.00	$ -	0.00	$ -	
Oct-14			0.00	$ -	0.00	$ -	
Nov-14			0.00	$ -	0.00	$ -	
Dec-14			0.00	$ -	0.00	$ -	
Total-14			1,332,427.00	$ 52,046,693.91	135,097.00	$ 5,598,432.15	$ 57,645,126.06

Northern States Power Company
Electric Operations - State of Minnesota
Wind Curtailment Summary Report - Curtailment Reason Code 4 (Other-Paid)
For January 2012 to June 2014

	Date Paid		Wind Production Delivered		Lost Production		
Production Month	Delivered MWh	Lost MWh	MWh Delivered	Amount Xcel Energy Paid	Lost MWh	Amount Xcel Energy Paid	Total Xcel Energy Paid
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			25,464.00	$ 667,660.84	1,010.00	$ 26,587.32	$ 694,248.16
May-12			26,650.00	$ 698,774.41	171.00	$ 4,477.33	$ 703,251.74
Jun-12			0.00	$ -	0.00	$ -	
Jul-12			14,310.00	$ 375,205.76	2.00	$ 53.75	$ 375,259.51
Aug-12			13,309.00	$ 348,962.24	34.00	$ 881.52	$ 349,843.76
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			245,113.00	$ 7,485,257.89	12,591.00	$ 393,356.65	$ 7,878,614.54
Jan-13			0.00	$ -	0.00	$ -	
Feb-13			19,700.00	$ 516,531.75	699.00	$ 18,334.34	$ 534,866.09
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			27,170.00	$ 712,391.32	313.00	$ 8,195.06	$ 720,586.38
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			46,870.00	$ 1,228,923.07	1,012.00	$ 26,529.40	$ 1,255,452.47
Jan-14			0.00	$ -	0.00	$ -	
Feb-14			0.00	$ -	0.00	$ -	
Mar-14			0.00	$ -	39.00	$ 1,156.30	$ 1,156.30
Apr-14			0.00	$ -	44.00	$ 1,274.95	$ 1,274.95
May-14			0.00	$ -	0.00	$ -	
Jun-14			0.00	$ -	0.00	$ -	
Jul-14			0.00	$ -	0.00	$ -	
Aug-14			0.00	$ -	0.00	$ -	
Sep-14			0.00	$ -	0.00	$ -	
Oct-14			0.00	$ -	0.00	$ -	
Nov-14			0.00	$ -	0.00	$ -	
Dec-14			0.00	$ -	0.00	$ -	
Total-14					83.00	$ 2,431.25	$ 2,431.25

Note: March and April 2014 "Other Paid" lost production was due to feeder line voltage faults.

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 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 have shifted from almost exclusively transmission system constraints in southwestern Minnesota to a combination of transmission system constraints and negative Locational Marginal Pricing (LMP). Additionally, the nature of transmission constraints is accentuated by the large concentration of wind facility operations along southern Minnesota and all through Iowa.

Significant transmission improvements in southwestern Minnesota have been completed and, consequently, future curtailment in this area will occur primarily during prior outage conditions for construction and maintenance or repair activities. 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) 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. 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.

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
Big Blue	36
Valley View	10
Community Wind South	30

The federal Production Tax Credit (PTC) program was revised in January 2013 to measure eligibility relative to beginning of construction rather than the "placed in service" deadlines previously in place. Projects that were not under construction prior to January 1, 2014 are ineligible for this credit. 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 PTC revision, but curtailment impacts will likely be delayed since the requirements for meeting the present PTC did not require the wind projects to go into service by December 31, 2013, but only to show progress towards completion.[1] Given PTC eligibility is now measured from the beginning stages of project development, the actual in-service dates of any of these qualifying wind projects will be during 2014 and 2015. This timing will allow completion of a portion of the necessary transmission upgrades and could 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

[1] On January 2, 2013, Congress temporarily extended the PTC for wind by one year from December 31, 2012 to December 31, 2013. 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. The Internal Revenue Service issued guidance in April 2013 as to how construction commencement would be evaluated for purposes of the year-end 2013 deadline. Two paths are available; one relating to "physical work of a significant nature" and the other relating to investment such that five percent of the total cost of the facility needs to have been incurred with continuous efforts thereafter.

and PPA wind facilities.[2] In addition, close to 1,700 MW of wind generation has recently gone into service in the surrounding areas.[3] 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 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 current 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[4]	425 MW
825 MW Wind Transmission Expansion Project	December 2007[5]	880 MW
Buffalo Ridge Incremental Generation Outlet (BRIGO)	December 2009[6]	1250 MW

[2] 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.
[3] These projects include G540/G548 (160 MW); G573/G574/G575 (200 MW); G735/J091 (266 MW); G798 (150 MW); G870 (200 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).
[4] 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.
[5] 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.
[6] With the completion of the BRIGO facilities, the southwest Minnesota operating guide no longer uses 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.

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.

Table 3
CapX Transmission Projects

Transmission Project	Transmission Owner	Planned In-Service Date[7]
CapX Brookings County - Southeast Twin Cities 345 kV Line	Xcel Energy, Great River Energy	March 2015
CapX - Fargo North Dakota - Northwest Twin Cities 345 kV Line	Xcel Energy, Great River Energy	May 2015
CapX - Southeast Twin Cities - LaCrosse, Wisconsin 345 kV Line	Xcel Energy, SMP and non-MISO	December 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 a significant number of 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.[8] The MVP projects, particularly the ones listed in the following table, will have a positive impact on Company-owned and PPA wind facilities.

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[7] The planned in-service dates were obtained from MISO's 2014 Transmission Expansion Plan Report (MTEP14) and are subject to change.
[8] The MISO Board of Directors approved the new transmission projects, which included the CapX Brookings County – Southeast Twin Citites 345 kV line as a MVP, on December 13, 2012.

Table 4
MVP Projects

Transmission Project	Transmission Owner	Planned/Actual In-Service Date
Pleasant Prairie - Zion Energy Center 345 kV Line	American Transmission Company	December 2013
Winco to Hazleton 345 kV Line	MidAmerica Energy, ITC Midwest	Mid- 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 2018

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, along with wind purchases for projects on-line or scheduled to come on-line through 2015.

CHART 1
NSP Wind Development
(1993 – May 2014 Actual, 2015 Scheduled)

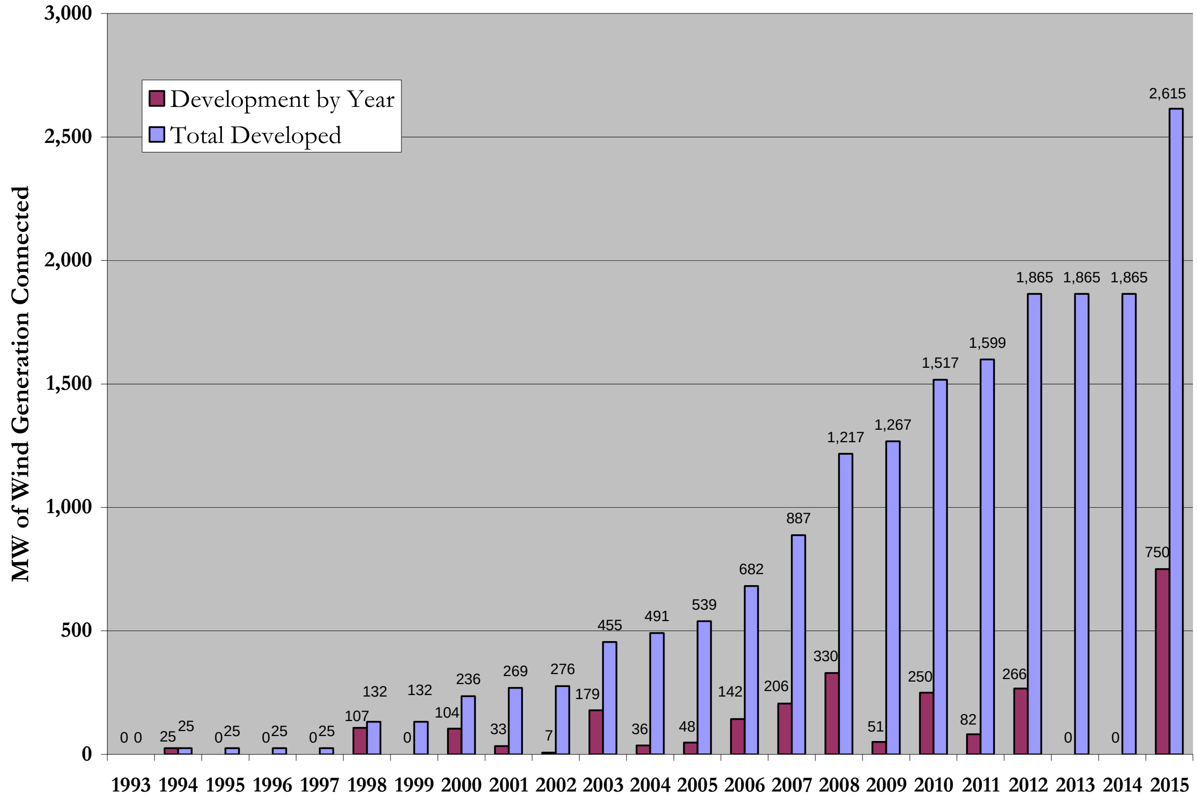
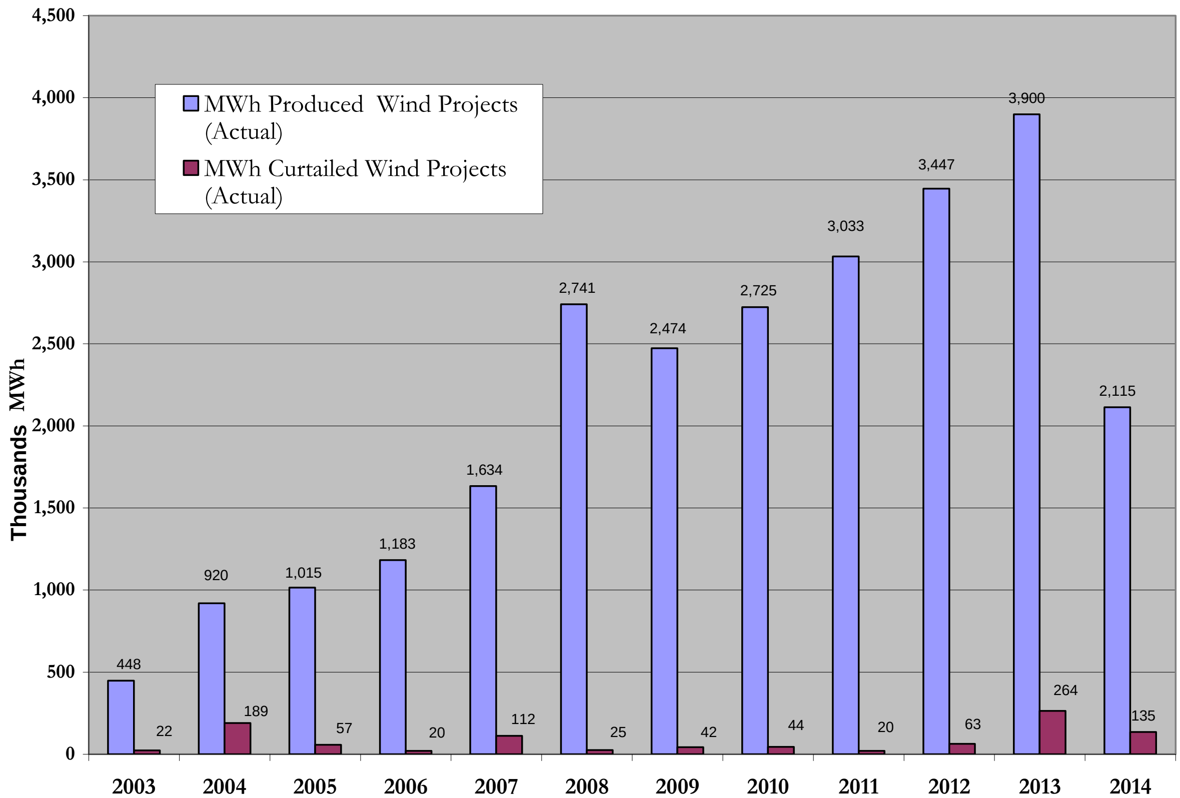


Chart 2 shows the comparison between total wind energy produced and the wind energy curtailed from the projects through May, 2014. Despite the lead/lag time associated with generation and transmission development, Chart 2 shows that wind curtailment is small compared to the total wind generation delivered. With 2013 being an exception as discussed below, the highest curtailment year was 2004. Chart 2 shows that when the transmission outlet capacity 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 PTCs.

As can be seen here, the amount of wind energy curtailed is very small compared to the amount of wind generation generated and delivered to the system. Wind curtailment, as a tool to manage wind generation volumes when necessary, has had the positive benefit of facilitating a large amount of wind resources to be added to the system, which would not otherwise have been possible.

Chart 2
NSP Wind Production & Curtailment (MWh)
(2014 Partial Year through May)



Curtailment during 2013 and through May 2014 was driven by a combination of negative LMP and transmission facility outages in southwest Minnesota. As indicated above, curtailment events during 2013 are elevated above what has become a more consistent level as a result of transmission facility outages taken to perform construction and maintenance activities.

The primary goal when planning construction and maintenance work that will impact wind generation output is to schedule these activities during times when wind is normally at its lowest levels – typically the summer months in the NSP service territory. While Xcel Energy attempts to plan outage work with this principle in mind, this is not always possible. From September through the end of 2013, there were unavoidable transmission outages taken to address three separate needs, resulting in significantly increase levels of curtailment than had been experienced in a number of years. In summary, the need for work-related to a storm event in July 2011, a severe ice storm in April 2013 and emergency maintenance on several high-voltage transformers, produced higher levels of curtailment payments than have been seen in a number of years.

Circumstances were such that significant transmission related work in southwestern Minnesota was required during what is normally the higher wind periods of fall and winter. Transmission related facilities involved that necessitated wind curtailment were as follows and are described further below:

- Buffalo Ridge – Pipestone – Split Rock 115 kV lines;
- Split Rock – Nobles – Lakefield Junction 345 kV lines;
- Buffalo Ridge Transformers TR1 and TR2; and,
- Chanarambie Transformers TR1 and TR2.

Buffalo Ridge – Pipestone – Split Rock 115 kV lines
The 115 kV lines coming from both Buffalo Ridge and Split Rock into the Pipestone substation are double circuited—with both lines sharing common towers—for five spans. These five spans are the only portion of the BRI-PIP-SPK line that did not require rebuilding to repair damage following the July 2011 tornado which struck the Buffalo Ridge area. However, as this line provides transmission service benefits to support Sioux Falls area load service in addition to wind generation outlet, this double circuited section needed to be rebuilt in order to gain the benefit of the higher line ratings made possible by the previously reconstructed facilities. Outages for this work were conducted during late July, August and September after structures ordered earlier in the year were delivered. This activity produced curtailment for wind generation connected to the Buffalo Ridge substation which included the Lake Benton I wind project and the majority of the Lake Benton II[9] wind project which were each curtailed during the period of the project work; a total of approximately 200 MW of installed nameplate capacity.

Split Rock – Nobles – Lakefield Junction 345 kV lines
A severe winter storm the week of April 8, 2013 produced significant, wide-spread icing from Sioux Falls all across southern Minnesota. Unprecedented damage occurred from the combination of ice weight and wind, causing a phenomenon

[9] The Lake Benton II wind facility has wind turbines connected to both the Lake Benton and Chanarambie substations. A portion of its wind turbines are directly connected to the Chanarambie substation and an additional, limited amount can deliver to the same substation by closing a normally open switch between feeder line.

known as 'galloping conductor'[10], bringing down and/or weakening equipment, conductor and ground wires all along the Split Rock-Nobles-Lakefield Junction 345 kV line. Significant (but temporary) repairs were performed as quickly as possible and the line was placed back into service on May 13, 2013, however, because of the extensive damage, more work was needed and a permanent repair plan was developed.

A detailed ground inspection of the condition of the line determined the materials necessary for permanent repair and equipment orders were placed soon after the line was back in service. Materials became available in early September 2013 and work began. Work on the Nobles-Lakefield Junction potion of the 345 kV line was done over 2 outage periods, mid-late September 2013 and all of December 2013. The Split Rock-Nobles portion of the 345 kV line began in September and continued through early November, with a further outage taken late in November. Critical work continued primarily along the Nobles Lakefield Junction portion during January and February, after which, further major work began again later in 2014.

The Split Rock-Nobles-Lakefield 345 kV line provides a key portion of the wind generation outlet from the southwestern Minnesota area and outages incurred along this line require reductions to the allowable amount of wind generation production that can be injected to the system at the Chanarambie, Fenton and Nobles County substations. Wind projects experiencing curtailment related to outages for work on this 345 kV line include: Lake Benton II, Chanarambie Power Partners, Ridgewind, Moraine I, Moraine II and Fenton, totaling well over 500 MW of installed nameplate wind capacity.

In addition to developing plans for damage repair, the Company also initiated an effort to proactively identify solutions to the galloping conductor issue and evaluate alternate conductor options for consideration in certain parts of the route where the geographic orientation may combine unfavorably with prevailing winter winds and icing conditions. Further work will require additional outages in 2014 and 2015 and will include activities such as installing various anti-galloping devices, phase spacers and reconductoring especially sensitive areas along the line route. Mitigation plans are being designed in collaboration with the Electric Power Research Institute (EPRI) who advised on the placement of line monitoring stations that serve as data collections points. Since the exact location and date of the next galloping event

[10] Conductor gallop is thought to be often caused by asymmetric conductor aerodynamics due to ice build up on one side of a wire, increasing the tendency of the normally round wire profile, to move oscillate vertically, horizontally or in a rotational manner.

cannot be predicted, EPRI will aid the Xcel Energy team in result evaluation over a period of time.

Buffalo Ridge Transformers TR1 and TR2
The Buffalo Ridge substation has two 115-34.5 kV transformers. Unplanned maintenance was necessary to replace the high-voltage, low-side winding bushings, when very high hydrogen levels were detected within the equipment through normal inspection and monitoring during summer of 2013. High hydrogen levels are an early indication of an impending failure within the bushing, which would have eventually caused a force outage to the transformer, potentially resulting in catastrophic transformer failure. Full transformer failure at this substation would cause significant disruption in providing wind generation outlet to connected facilities. Equipment was ordered and work began as soon as materials were received. Each transformer was removed from service one at-a-time to minimize curtailment impacts to wind projects connected to the substation, Lake Benton I and most of Lake Benton II. TR1 was taken out of service and repaired late October through mid-November 2013 and the same work was done on TR2 from mid-November to late-November 2013. Transformer insulation materials will generate some combustible gases during normal operations. Abnormal conditions, such as faults or extreme loading conditions may generate higher amounts of combustible gases, including hydrogen. The Company has not determined the exact cause of the high hydrogen levels, but will continue to monitor and investigate.

Chanarambie Transformers TR1 and TR2
The Chanarambie substation has two 115-34.5 kV transformers. Following the inspection results experienced at the Buffalo Ridge transformers, the Chanarambie transformers were also investigated and found to also have very high hydrogen levels on the low-side winding bushings. Full transformer failure at this substation would cause significant disruption in providing wind generation outlet to connected facilities. Equipment was ordered and work began as soon as materials were received. To minimize curtailment levels, the bushings were replaced on each transformer, by taking outages, one at-a-time, during early- and mid-December 2013. Transformer outages at the Chanarambie substation require reductions to the allowable wind generation that can be injected to the system at that point, impacting a portion of Lake Benton II, Ridgewind, Moraine I and Moraine II wind projects.

Generally, other wind curtailment during the February through May period was primarily related to negative LMP prices associated with congestion throughout the Minnesota and Iowa region due to a number of regional transmission outages, as well as the higher levels of wind generation present.

Chart 3 shows the corresponding production and curtailment costs through May, 2014. As with wind generation produced and curtailed, paid curtailment is a very small portion of total cost of wind generation on the system.

Chart 3
NSP Wind Production & Curtailment Payments
(Note: 2014 Partial Year through May)

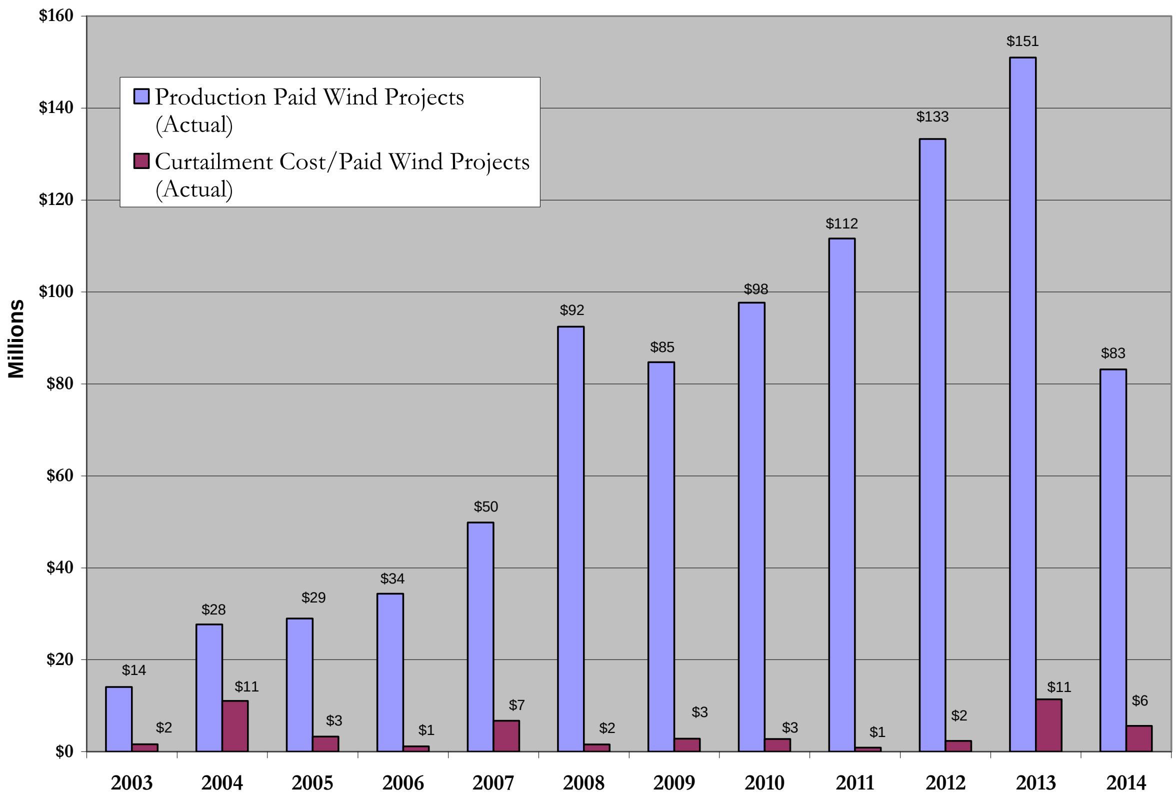
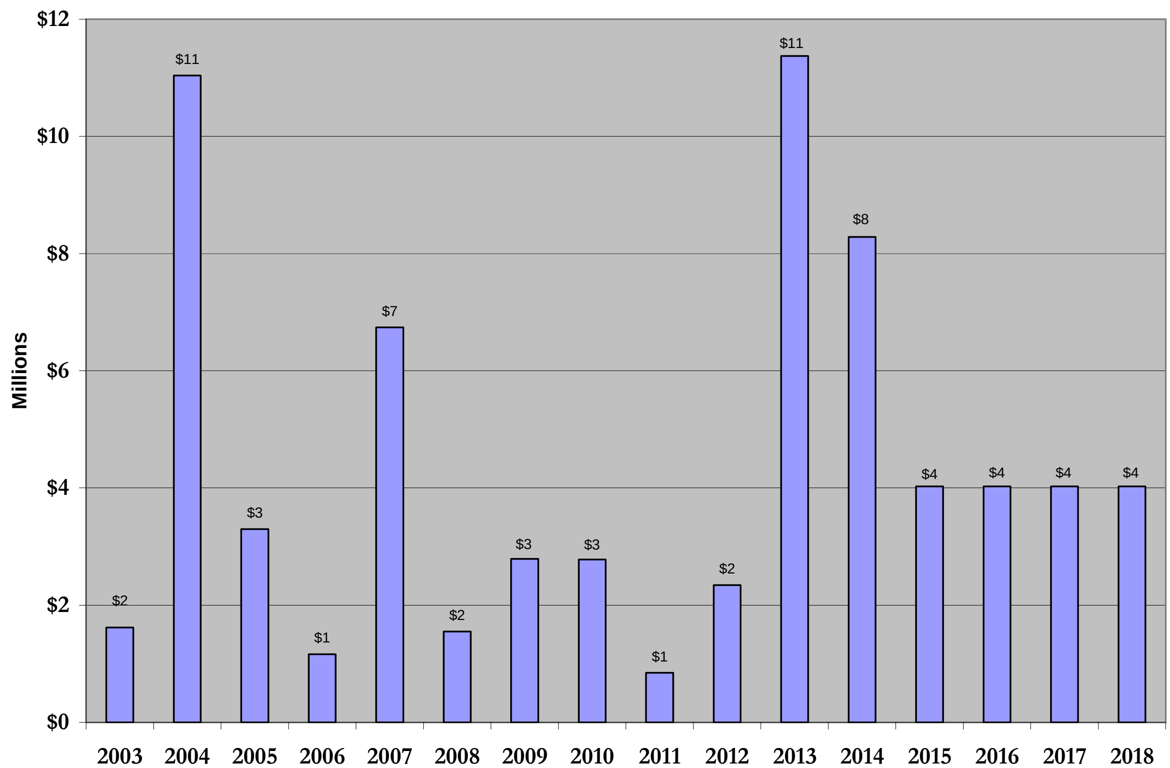


Chart 4 shows the Company's historical wind curtailment costs along with the five-year estimate of future costs. Over the next five years, we anticipate that the wind generation curtailment and associated payments to vendors will result from planned and unplanned transmission outages and negative LMP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

Chart 4
NSP Wind Curtailment Payments
(2003 – May 2014 Actual, Year-End 2014 – 2018 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 regards using recent actual experience as the basis for estimating future wind curtailment to be a reasonable methodology and has used the average of the last 5 years of historical curtailment data[11] to project the level of future curtailment. The basis for moving to this type of curtailment estimate was that by 2008 and 2009, the transmission infrastructure caught up with wind generation development and curtailment began to be more consistent. Also, using the last five years to predict curtailment will help capture and reflect ongoing trends with wind and transmission

[11] The 2014 curtailment estimate used a combination of actual curtailment through May 2014 and a representative portion of average annual historical curtailment.

development, as well as the outages necessary for maintenance, repair and construction activity.

Future wind generation additions and completion of the CapX and other MVP transmission projects will likely impact the amount of future curtailment experienced. It is reasonable to expect curtailment levels will be reduced once the new transmission lines are in service. However, there is no certainty as to when, and if, the numerous wind generation projects currently in the development queue, will actually come to fruition. As such, the Company did not try to predict the specific impact that future wind generation or completion of the CapX and MVP transmission projects would have on curtailment.

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.