REPORT TO THE LEGISLATURE ON EMISSIONS REDUCTION PROJECTS UNDER MINNESOTA STATUTES 216B.1692

Submitted by the

Minnesota Public Utilities Commission

March 2008

REPORT TO THE LEGISLATURE
ON EMISSIONS REDUCTION PROJECTS
UNDER MINNESOTA STATUTES §216B.1692

Introduction

In 2001, Minnesota Statutes §216B.1692, Emissions Reduction Rider, was enacted The statute *allows* a utility to file with the Public Utilities Commission (Commission) for a rider to collect, outside of a general rate case, the costs of emissions reduction programs utilities choose to pursue, if the programs meet certain qualifications in the statute[1]. Projects needed to comply with new state or federal air quality standards (such as the Regional Haze Rule, Clean Air Interstate Rule, and Clean Air Mercury Rule) or as a corrective action as a part of any state or federal enforcement actions are not eligible for recovery under this rider.

In 2006, the sunset date for §216B.1692 was extended from June 30, 2006 to December 31, 2013 and cost recovery provisions were expanded, in conjunction with the adoption of the Mercury Emissions Reduction Act [Minn. Stat. §§216B.68-.688], discussed below.

In 2006, Minnesota Statutes §216B.682, Mercury Emissions Reduction Plans, and Minnesota Statutes §216B.683, Cost Recovery and Financial Incentives, were enacted. Section 216B.682 *requires* Minnesota Power and Xcel Energy to submit plans most likely to result in the reduction of mercury emissions by ninety percent at their largest coal-fired electric generating units. In addition, the Act requires the Minnesota Pollution Control Agency (PCA) to evaluate these plans and the Commission to review, evaluate, and approve these plans.

Section 216B.683 expands the cost recovery provisions of § 216B.1692 to include cost recovery for utility mercury reduction plans and for other emissions reduction activities undertaken along with the mercury reductions, even if those other emissions reductions are needed to comply with federal or state laws or actions.

---

[1] In 2003, the legislature clarified that the three projects comprising the primary proposal filed with the Commission in July 2002 by Xcel Energy, known as the Metropolitan Emissions Reduction Project (MERP), qualified under §216B.1692. [First Special Session 2003, Chapter 11, Article 3, Section 12.]

Subdivision 7 of §216B.1692 directs the Commission, in consultation with the Commissioners of Commerce and Pollution Control Agency, to submit a report to the legislature which discusses:

(1) the number of participating public utilities;
(2) the total cost of each project and any associated incentives;
(3) the reduction in air emissions achieved;
(4) rate impacts of the cost recovery mechanisms; and
(5) an assessment of the effectiveness of the cost recovery mechanism in accomplishing power plant emissions reductions in excess of those required by law.

This report discussed the items required above, as well as related items associated with the 2006 Mercury Reduction Act.

Summary of Emissions Reduction Projects

Xcel - King, High Bridge and Riverside Plants

Xcel Energy was the first utility to file under Minn. Stat. §216B.1692. In July 2002, Xcel Energy filed its proposed metropolitan emissions reduction plan (MERP) with the Commission. (Commission docket number E-002/M-02-633)[2] Xcel's primary proposal consisted of changes to three of its coal-fired electric generating plants.

Allen S King Plant, Bayport: Xcel proposed to install new emissions control devices on the King plant to significantly reduce emissions and to rehabilitate elements of plant equipment to extend the useful life of the plant until at least 2032. Generation capacity at the site would be increased by 60 MW. The King Plant project has been completed and the plant and went into service in July of 2007.

High Bridge Plant, St. Paul: Xcel proposed to demolish the existing coal plant and replace it with a natural gas-fired combined cycle plant. This would increase generation capacity at the site by 268 MW. The High Bridge project is scheduled for a May 2008 commercial operation date.

[2] Public copies of all filings cited in this report are accessible via the Commission's web page (www.puc.state.mn.us). Click on "eDockets & eFiling" under Quick Links. On the eFiling home page, click on "Search documents" (left margin). On the Search Documents page, enter the last two sets of digits in the "Docket Number" boxes; e.g., for MERP enter (02) under "Year" and (633) under "Number". Click on "Search." Chose document of interest and click on "Public" in left margin.

Riverside Plant, Minneapolis: Xcel proposed to replace the existing coal-fired units 6 and 7 with a natural gas combined-cycle plant. This would increase generation capacity at the site by 79 MW. The Riverside project is well underway and is scheduled for completion in May 2009.

Xcel – Sherco 1 and 2

In December of 2007, Xcel submitted a revised proposed Emissions Reduction Plan for Units 1 and 2 at its Sherco facility. (Commission docket number E-002/M-07-002) Xcel has indicated that it intends to submit in early 2008 a rate rider petition pursuant to section 216B.1692. Xcel expects the projects to be completed in the 2012-2013 time-frame. Xcel states that while the projects will affect several different emissions, a primary goal of the plan is to control mercury, and therefore proposes that the plan be recognized as its Mercury Emissions Reduction Plan for those units as well. This project also will expand generating capacity by about 69 MW from the units.

Minnesota Power – Laskin Units 1 & 2 and Taconite Harbor

On October 14, 2005, Minnesota Power (MP) filed its Arrowhead Region Emission Abatement Plan (AREA) plan. (Commission docket number E-015/M-05-1678) MP proposed to install technology to reduce the amount of nitrogen oxides (NO_x) emitted from both generators at the Syl Laskin Energy Center (Laskin) and to reduce NO_x, sulfur dioxide (SO_2) and mercury (H_g) emitted from the three generators of the Taconite Harbor Energy Center (Taconite Harbor). Neither project was expected to change any plant's generating capacity [Laskin, 100MW; Taconite Harbor; 225MW].

On March 27, 2007, MP reported that the status of these projects:

Laskin Unit 2 has been retrofitted and was placed back in service in November 2006.

Laskin Unit 1 has been retrofitted and was placed back in service in April 2007.

Taconite Harbor Unit 2 was placed back in service in mid- 2007. MP plans to retrofit the second unit in the spring of 2008 and the third unit in the fall of 2008.

Summary of *Mercury* Emission Reduction Projects

Minnesota Power – Boswell Unit 3

In October of 2006, MP filed its Boswell 3 Environmental Improvement Plan and Rider.

(Commission docket numbers E-015/M-06-1501 & E-015/M-07-1430) This was the first filing to be considered by the Commission under the Mercury Emissions Reduction Act. This plan involves retrofits to reduce emissions through application of mercury control technology and Best Available Control Technology for NO_x, SO_2, and PM. This filing was made under Minnesota Statutes §216B.6851, Utility Option. MP projects an in-service date of late 2009.

Xcel – Sherco Unit 3 and King Plant

In December of 2007, Xcel filed a proposed Mercury Emissions Reduction Plan for Sherco Unit 3 and the King Plant. (Commission docket numbers E-002/M-07-1601 and E-002/M-07-1602, respectively) Xcel plans to install sorbent injection systems in these plants. Xcel is anticipating completion by December 2009 and December 2010, respectively.

Discussion of Topics Listed in §216B.1692, Subivision 7

A. The Cost of Each Project and Associated Incentives

Xcel - MERP

Xcel Energy originally estimated that the total capital cost of its three-project MERP proposal would be $1.04 billion. Under the settlement agreement approved by the Commission in March of 2004, the total capital cost benchmark for the three projects was estimated to be slightly under $1 billion, broken down as follows:

King:	$381,560,000
High Bridge:	394,840,000
Riverside:	212,785,000
Total:	$988,785,000

In an October, 2007 filing, Xcel estimated that capital costs for the King Plant are about $44 million over budget; the High Bridge Plant is expected to be about $48 million under budget; and the Riverside Plant is expected to be about $30 million over budget. Under the 2007 tariff approved for the MERP, Xcel is to reduce its return on equity for exceeding budgeted costs and can receive a greater return on equity for completing work under budget. In its October 2007 filing, Xcel proposed to adjust the return on equity associated with these projects in a manner consistent with the approved tariff provisions.

Xcel – Sherco Units 1 & 2

The project-related capital costs for the two units are estimated to be $1.1 billion; $517 million for

Unit 1 and $542 for Unit 2.

MP - AREA

In its initial filing, MP estimated that the AREA plan will require an investment of $53.9 million, plus $4.07 million annually for operation and maintenance. The Commission capped MPs rate rider for the projects at these estimated levels.

Subsequent filings by MP provided the following information regarding the capital and O & M costs of the project completed thus far:

Description	Laskin Unit 2	Laskin Unit 1	Taconite Harbor Unit 2	Total
Capital	$2,622,000[3]	$1,878,000	$24,700,000[4]	$29,200,000
Operations & Maintenance	$36,000	$36,000	$1,400,000	$1,472,000
Total	$2,658,000	$1,914,000	$26,100,000	$30,672,000

Mercury Emission Projects:

MP – Boswell Unit 3

The project-related capital costs are estimated to be $203 million and operations and maintenance costs to be $11.6 million. MP is recovering costs for the project through the Boswell 3 Rider to the expected year-end 2009 in-service date. MP did not propose a performance-based incentive.

Xcel – Sherco Unit 3 and King

The project-related capital cost is estimated to be $9 million (i.e., $4.5 million for each project); and $9.3 million ($5.5 million for Sherco and $3.8 million for King) for operations and maintenance.

[3] Laskin Unit 2 capital cost is 17.5 percent higher than initially projected by MP. This is due to slightly higher than expected installation costs. MP noted that experience gained on Unit 2 will allow installation on Unit 1 to offset the increased costs of Unit 2.

[4] This total includes capital costs for facilities and system common to all three Taconite Harbor units. Consequently, it is higher than the $16,508,000 per unit capital cost MP initially estimated. Per unit costs on Units 1 and 3 are expected to be correspondingly lower. This total also includes costs of addressing the PCA's concerns about particulate matter.

As regards all projects, fuel costs continue to be somewhat of an unknown factor. Natural gas prices, in particular, have demonstrated volatility and a clear upward trend. Coal prices are less volatile but are also exhibiting an upward trend.

B. The Reductions in Air Emissions

Xcel - MERP

In its December 30, 2002 report, as updated on February 21, 2003, the PCA estimated the emissions reductions to be expected from the primary MERP project:

	SO_2 tons/year	NOx tons/year	PM_{10} tons/year	CO_2 tons/year	CO tons/year	Pb lbs/year	Hg lbs/year
Current Emissions	34,178	24,206	954	6,545,727	860	266	232
Change in Emissions	-31,880	-22,017	-610	-813,603	-50	-60	-178
Percentage Change	-93.3	-91	-64	-12	-1	-22.5	-76.0

The PCA, using the Commission's externality values out to 2040, estimated that the MERP plan environmental and health benefits were in the $200 to $500 million range. The PCA further stated that these numbers understate the actual environmental and health benefits, because they do not include the value of reductions in such other pollutants as fine particulate matter (PM_{25}, acid rain, ground level ozone, regional haze and mercury.

As of early 2008, the King plant is completing startup and performing compliance tests as required in its air emissions permit issued by the PCA. Reports will be submitted to the MPCA and compliance with air emission limits will be demonstrated by 2009. Current operating information from the NOx and SO_2 continuous emissions monitors indicate that the required reductions are being achieved.

Xcel – Sherco Units 1 & 2

The table on the following page provides Xcel's estimate of reductions to be expected from the project from its December 2007 filing:

Annualized Emissions	SO_2 Tons/yr	NO_x Tons/yr	CO_2 Tons/yr	PM Tons/yr	H_g Lbs/yr
Before	13,050	11,600	9,900,000	920	610
After	5,460	7,450	10,200,000	750	80
Sherco Change	-7,590	-4,150	300,000	-170	-530
CO_2 Offsets			-300,000		
Total Project Changes			0		
Percent Reduction	58%	36%	0%	18%	87%

Efficiency gains are expected to increase capacity by approximately 70 MWs. These estimates have not yet been reviewed by the PCA.

MP - AREA

In its January 2006 report, the PCA estimated the following emissions reductions from the MP AREA project:

	SO_2 tons/year	NOx tons/year	PM tons/year	PM_{10} tons/year	Hg lbs/year
Current annual emission from the two plants	7,138	5,694	398	443	94
Emissions after retrofits	3,589	1,949	398	443	25.8
Percent reduction	50%	66%	None	None	72%

The PCA estimated benefits incorporating information from recent federal benefit estimates for the Clear Air Act reduction program. That examination indicates that, to the extent benefits can be quantified, AREA's benefits approximate, and most likely exceed, the projected costs. Parties to the proceeding supported this conclusion. The PCA expressed some concern that the method MP proposed to reduce SO_2 emission is likely to increase emissions of fine particulates (PM).

MP recently reported to the Commission that NO_x reduction goals are being realized. The company also reported that SO_2 reductions at the Taconite Harbor project have been less than anticipated and that the company has taken steps to improve performance. Also, MP reported that mercury reductions at the Taconite Harbor project have not met expectations and that the company is working with the technology vendor to determine solutions. In the meantime, MP has pursued alternative approaches for mercury removal. Final results on these alternative approaches are not yet available. MP indicated that it plans to file a complete status report with the

Commission in March of 2008.

Mercury Emission Projects:

MP – Boswell Unit 3

MP and MPCA expect these retrofits to achieve a 90% reduction in mercury emissions.

Xcel – Sherco 3 & King

Xcel estimates the sorbent injection technology will reduce mercury emission by 81 to 90 percent on a fuel basis, or 77 to 88 percent on a flue gas basis, for the Sherco unit; and 87 to 90 percent on a fuel basis, or 58 to 69 percent on a flue gas basis, for the King Plant.

C. The Rate Impacts of the Cost Recovery Mechanisms

Xcel - MERP

As noted above, the capital costs of these projects are projected to be close to $1 billion. The following chart shows the projected dollar amounts to be collected through the Environmental Improvement Rider for seven years, starting in 2006.

	Rate Rider Revenue	Cumulative Increase over Present Rates
2006	$ 33,716,199	1.8 %
2007	$ 68,737,013	3.6 %
2008	$ 99,787,345	5.1 %
2009	$ 111,097,977	5.5 %
2010	$ 107,048,196	5.2 %
2011	$ 102,811,979	5.0 %
2012	$ 9 8,756,777	4.7 %

Collections from Xcel ratepayers started in 2006, with commencement of work on the King Plant. For 2006, the estimated rate impact was $0.00126 per kWh, or about $11.40 for the year for a residential customer using 750 kWh a month. It was noted at that time that this amount was expected to increase as work on the other projects advances. Xcel's October 2007 filing provided information on the costs for 2008 and reflected work on all three projects. Xcel estimated the Environmental Improvement Rider for 2008 at $0.00291 per kWh, or about $26.26 for the year for a residential customer using 750 kWh a month.

Xcel – Sherco Units 1 & 2

Xcel's estimate of the rate effects of its proposal are as follows:

Year	Revenue Requirements ($000)	Rate Impact ($/kWh)	Average Annual Rate Impact for Residential Customer ($/year)	Average Rate Increase (%)
2009	$1,302	$0.000039	$0.36	0.0
2010	$19,484	$0.000576	$5.16	0.7
2011	$30,784	$0.000898	$8.04	1.0
2012	$66,986	$0.001928	$17.40	2.1
2013	$117,613	$0.003350	$30.12	3.5
2014	$139,768	$0.003939	$35.40	4.1
2015	$134,326	$0.003744	$33.72	3.8

MP - AREA

MP originally estimated the cost of these projects at $53.9 million for capital costs and $4.07 million annually for operation and maintenance. While the financial consequence to customers of the AREA Plan will vary over time, MP estimated that the rider for the completed project will increase the cost of electricity for an average household no more than $11.40 annually.

Subsequent filings by MP have provided the following cost information:

Year	Revenue Requirements ($000)	Rate Impact - Residential ($/kWh)	Average Annual Rate Impact for Residential Customer ($/year)	Average Rate Increase (%)
2006	$4,831	$0.00048	$4.08	0.7
2007	$9,476	$0.00094	$8.04	1.3
2008	$13,426	$0.00133	$11.40	1.85

Recent information filed by MP indicates that the average annual rate impact for an MP residential customer for the work done so far is $5.64 as of June 30, 2008 (a 0.91% increase).

Mercury Emission Projects:

Xcel – Sherco 3 & King

Xcel estimates the average rate impact of the King project for a residential customer will be $0.06 per month; for the Sherco Unit 3 project, the impact for an average residential customer is expected to be $0.10 per month.

MP – Boswell Unit 3

MP estimates an average increase for a residential customer of $1.15 per month (2.24%) for 2008, $1.70 per month (3.32%) for 2009, and $3.44 per month (6.7%) in 2010.

D. An Assessment of the Effectiveness of the Cost Recovery Mechanisms

The cost recovery mechanism for stand-alone emission reduction projects under §216B.1692 provides for a utility to recover costs of *voluntary* initiatives to reduce emission levels, initiatives which they would not otherwise be required to undertake at all or at least would not be required to do as soon or as completely. Therefore, it is logical to assume that the existence of this cost recovery provision was effective in influencing the scope and timing of Xcel's MERP and MP's AREA projects.

The cost recovery mechanism for mercury reduction projects under §216B.683, provides for a utility to recover the costs of a *mandatory* program to reduce mercury emissions. Whether the

existence of a cost recovery mechanism for a mandatory program has a significant influence on the program is more problematic to determine. The existence of this cost recovery mechanism may have influenced the timing of MP's mercury reduction plan for Boswell 3, since it was filed earlier than the December 31, 2007 date required by the statute, and possibly had some influence on the scope of the program..

It is likely that the existence of both of these rider provisions would influence the timing of potential rate case filings. The capital costs and on-going expenses associated with emissions and mercury reduction programs are significant, and assurance of recovery of prudently-incurred expenditures in a timely manner is certainly important to the covered utilities.

It is important to recognize that the special rate riders incorporated in Minnesota Statutes Sections 216B.1692 and 216B.683 join a number of special recovery mechanisms in Minnesota statutes. There are currently at least 18 different special cost recovery mechanisms required or allowed by Minnesota statutes that permit utilities to adjust their rates outside of a general rate case. The number of such mechanisms has increased significantly in the last several years, with no fewer than five new ones enacted as part of 2007 legislation alone.

The theoretical rationale for such special rate mechanisms is to allow recovery of costs outside of a utility's control (such as the fuel clause adjustment) or of the costs of publicly mandated programs or objectives (such as renewable energy standards) which may not have been reflected already in existing utility rates. These mechanisms allow companies to increase rates without having to go through a full rate case review, and thus to begin to recover the costs more quickly from their ratepayers. They also reduce the financial and business risk for the utility, which should be accounted for in a general rate proceeding. However, under these cost recovery mechanisms, utilities recover new or increased specific costs *without* a review of the reasonableness of their overall rates. In a rate case, all costs (i.e., those that increase as well as those that *decrease*) are considered in arriving at a just and reasonable overall level of utility rates for recovery from ratepayers

In evaluating these special recovery mechanisms, the Legislature has the difficult task of balancing the potential benefits that such rate riders may enable versus the potential costs to ratepayers and the resultant marginalization of the Commission's overall rate-making processes. Before granting new special recovery authority or broadening the scope of existing recovery riders, the Legislature should take great care to assess whether such measures are really necessary or likely to be effective in achieving desired goals.