



**2006 – 2007 MINNESOTA  
CONSERVATION IMPROVEMENT PROGRAM  
ENERGY AND CO<sub>2</sub> SAVINGS REPORT**

**January 15, 2009**

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## I. INTRODUCTION

The Minnesota Conservation Improvement Program (CIP), first enacted by the Minnesota Legislature in 1982, requires Minnesota natural gas and electric utilities to invest a portion of their revenues in energy efficiency and conservation programs. These programs are intended to provide incentives to consumers and businesses for saving energy through the purchase of energy efficient equipment and/or changing behaviors related to energy consumption. Typical conservation improvement programs include furnace rebates, lighting rebates, and building design assistance. Utility CIPs are funded through surcharges added to the electric and natural gas rates charged to utility customers. The Office of Energy Security (OES) in the Minnesota Department of Commerce provides regulatory oversight over use of CIP funds.

There are three primary benefits of conservation. First, conservation helps the utilities and their customers avoid the operating costs of providing more electricity and natural gas such as buying fuel and operating and maintaining power plants. Second, conservation helps the utilities and their customers avoid or delay the capital costs of adding new system capacity such as new power plants, transmission lines, natural gas pipelines, and distribution systems. Third, conservation reduces carbon dioxide and other emissions released by burning fossil fuels.

Conservation is a critical part of Minnesota's efforts to meet its residents' energy needs and reduce greenhouse gases. In 2007, Minnesota's utilities devoted approximately \$108 million to CIP activities and achieved total annual energy savings of 464,000 MWh of electricity and 1.9 million MCF of natural gas, resulting in approximately 535,000 tons of avoided carbon dioxide emissions. Historically, CIP projects have reduced electricity consumption in Minnesota by approximately 0.8 percent annually out of an estimated growth rate of 2.3 percent without CIP.<sup>1</sup> Legislation passed in 2007 strengthened Minnesota's commitment to energy savings, establishing an annual savings goal of 1.5 percent of retail sales for electric and natural gas utilities, which is in addition to the spending requirements that are already in place.

The OES strives to ensure that the electricity and natural gas savings reported through CIP are accurate and that programs are operated cost-effectively<sup>2</sup> through the CIP planning and review process. Investor-owned utilities are required to file proposed CIP plans, covering one to three years, with the OES.<sup>3</sup> The OES employs a variety of methods and tools to review the plans, and has authority to modify program goals or savings assumptions. Investor-owned utilities also file annual status reports summarizing program performance including custom commercial/industrial projects completed during the year. Since these custom projects typically are quite large, OES typically reviews a selection of these custom projects to ensure that the engineering assumptions

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<sup>1</sup> See the 2005 Legislative Auditors Report on the Energy Conservation Improvement Program available at: <http://www.auditor.leg.state.mn.us/Ped/2005/pe0504.htm>.

<sup>2</sup> Cost-effectiveness in Minnesota CIPs are defined according to four benefit-cost tests: Societal, Ratepayer, Participant, and Utility. More information on these tests is provided in the Legislative Auditor's Report noted above. The OES focuses on the Societal test as a measure of program cost-effectiveness consistent with its mission as a public agency.

<sup>3</sup> OES has established a filing schedule that will eventually result in all utilities filing three-year plans.

and methodologies are sound. The process for regulating cooperative and municipal utility CIPs is similar to the investor-owned utility procedures, though due to their status as non-rate regulated entities, OES's role is more advisory in nature.

Minnesota's conservation and efficiency programs have been widely heralded in their successes and achievements. In 2008, the American Council for an Energy Efficient Economy, a highly respected research and advocacy organization, ranked Minnesota's utility conservation programs as fourth in the nation in terms of program policies and practices.<sup>4</sup> With the 2007 changes to the CIP statutes discussed below, utilities and OES are challenged to increase the energy and carbon dioxide savings from CIP even further, while still maintaining cost-effective programs.

## **II. CHANGES TO CIP AS A RESULT OF THE NGEA OF 2007**

During the 2007 legislative session, the Legislature passed The Next Generation Energy Act of 2007 (Laws of 2007, Chapter 136) which significantly changed CIP. The most significant change was the addition of the 1.5 percent savings goal for all utilities, which changed the focus of CIP compliance from meeting spending requirements to meeting a savings goal. Previously the law required that each natural gas and electric utility spend 0.5 percent or 1.5 percent of gross operating revenues (GOR) annually,<sup>5</sup> respectively, on their CIPs. The revised statute added an energy savings goal for each utility equal to 1.5 percent of its average annual retail energy sales in Minnesota, excluding sales to certain facilities that have been granted exemption from CIP charges by the Commissioner of Commerce.<sup>6</sup> The CIP savings goal is related to the broader state goal of reducing per capita fossil fuel use by 15 percent by 2015, and is ultimately an integral part of any effort to reduce statewide CO<sub>2</sub> emissions.

Recognizing the diverse challenges faced by Minnesota's utilities, the NGEA included a provision which allows the Director of the OES to adjust a utility's savings goal based on its historical conservation investment experience, customer class makeup, load growth, a conservation potential study, or other factors determined by the Director. Based on one or more of these factors, the Director may lower a utility's savings goal, though 1 percent is the minimum level. The law also allowed for the possibility of counting certain waste heat electricity generation projects and utility infrastructure improvements towards CIP, though savings from these projects count in addition to the 1 percent minimum through conservation improvements..

The NGEA also expanded the allowable program activities under CIP, specifying that savings can be achieved through rate design, energy codes and appliance standard changes, market transformation programs, programs designed to change consumer behavior, and utility infrastructure efficiency improvements, in addition to traditional demand-side programs. Certain

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<sup>4</sup> See "The 2008 State Energy Efficiency Scorecard" (Washington, DC: American Council for an Energy-Efficient Economy, October 2008), page 2. Full report available at <http://www.aceee.org/pubs/e086.htm>.

<sup>5</sup> Xcel Energy, as a utility owning nuclear generating facilities, is required to spend 2 percent of gross revenues annually.

<sup>6</sup> Each utility's savings goal is based on an average of the weather normalized retail sales over the most recent three-year period, excluding sales to large energy facilities that have been exempted from CIP by the Commissioner of the Department of Commerce. Minnesota Power, Marshall Municipal Utilities, Xcel Energy, and Minnesota Energy Resources Corporation are the only utilities with exempted customers.

waste heat to electricity generation projects are also now allowable under CIP. These changes opened up a number of new avenues for utilities to achieve the 1.5 percent savings goal, though more work is needed to quantify the savings from these activities. The consumer behavioral programs offer significant potential savings to residential consumers and are especially important to utilities with largely residential loads. Several research and pilot projects are underway now to determine how to best quantify the savings from these new program options.

Based on historic savings levels through CIP, the 1.5 percent savings goal is often regarded as a “stretch goal” for most utilities, representing a doubling of electric energy savings and a nearly 2.5 times increase in gas savings over 2007 savings levels (though the range across utilities is large, with some utilities having to increase their savings by much greater factors.) Utilities are currently working on intensifying their program activities and exploring new technologies and programs in preparation for the savings goal taking effect in 2010.

### **III. PROGRESS RELATED TO THE NGEA OF 2007**

#### **A. *DEEMED SAVINGS DATABASE DEVELOPMENT***

The OES is assisting utilities in identifying those efficiency and conservation measures and strategies that produce the most cost-effective energy savings. The OES is also working with utilities and stakeholders on determining how to calculate those energy savings in a scientifically accurate manner. The OES has hired an experienced engineering firm to identify, review and assess the assumptions used to determine the energy savings for many standard efficiency measures. The contractor has identified a range of energy savings estimates for each typical conservation improvement measures, many of which are implemented by utilities and energy service companies around the nation. While there is a vast body of energy saving estimates associated with these measures, the estimated energy savings for each measure can vary broadly, depending on climate, facility type, and end use of a measure. This can call into question the validity of the engineering calculations used to determine energy savings, and lead to an array of different energy savings calculations between utilities. The OES project will assess the methodologies used for the varying estimates to identify those estimates and calculations that are most reliable for Minnesota utilities to use in their conservation improvement projects. In addition, the OES will convene ongoing stakeholder workgroups to finalize the underlying assumptions, revise the calculations as necessary (e.g., to reflect a change in baseline standards), and add new measures as they become available.

There is a need for ongoing research to verify the savings associated with measures that are rebated under utility conservation programs. This could include field monitoring of installed measures that would provide data on the actual savings of one technology over its standard efficiency counterpart. Such a testing program could also provide savings verification of different conservation strategies and indirect program activities. Potentially, the testing program could become a regional or national center for energy efficiency verification that would serve a similar function for conservation programs as the Underwriters Laboratory currently provides for electrical equipment. The primary purpose of this center would be to verify the energy savings assumptions that make up a Deemed Savings Database. This center could be self-sustaining in

that it could provide the basic data for the energy savings, and associated measure lifetimes of a host of energy efficiency and conservation measures.

#### *B. MEASUREMENT AND VERIFICATION*

The OES will continue to work with all utilities to increase Measurement and Verification (M&V) activities. In 2008, the OES established M&V protocols<sup>7</sup> for all utilities, which require that utility projects with first-year savings of 1,000,000 kWh of electricity or 20,000 MCF of natural gas undergo specific M&V activities to ensure that the savings are being realized. The savings levels that trigger M&V requirements were discussed extensively with utility stakeholders and were established at a level that was sufficient to keep M&V costs at a reasonable level relative to the savings achieved. The OES set a guideline that M&V costs should be limited to less than 10 percent of the projects projected first-year savings.

#### *C. RESEARCH AND DEVELOPMENT*

The NGEA authorized the OES to assess utilities up to \$3.6 million annually for research and development projects that further the ability of utilities to reach their 1.5 percent energy conservation goal. Over the last year, OES has met with utilities and other stakeholders to get input on the types of projects that utilities think would be most beneficial to identifying new energy savings programs to assist in meeting the energy conservation goal. OES issued its first request for proposals in April 2008 to fund research into specific types of new conservation measures, including conservation potential assessments, technology pilot projects, and programs targeted at influencing consumer behavior. The OES received a total of 42 proposals with requests for more than \$10 million and matching funds of over \$5 million. From these projects, the OES selected 10 proposals for \$1.65 million in available funding. This new authority provides an ability to fund new projects aimed at assessing new promising efficiency technologies and strategies and communicate the results to Minnesota utilities so they can assess the costs and impact that the technology could have if applied in their service territory.

#### *D. ELECTRIC UTILITY INFRASTRUCTURE PROJECTS*

An additional area where the OES will be working with utilities and stakeholders is in the evaluation of the energy savings impacts of electric utility infrastructure (EUI) projects. Such an effort will include the development of a reference database of these projects that can be accessed by utilities. Currently there is little guidance available to utilities for quantifying the energy savings associated with EUI projects. This is partly by design: as there is little experience in working with these projects, we did not want to overly restrict utilities, and the engineers that evaluate these projects. Furthermore, these types of projects only apply to the 0.5 percent of energy savings above 1 percent, so the magnitude of savings associated with these project types will be limited, although capturing these savings will be critical for some utilities to meet the full 1.5 percent energy savings goal.

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<sup>7</sup> See the Director of the Office of Energy Security's Decision dated July 23, 2008 in Docket No. 06-1591, <https://www.edockets.state.mn.us/EFiling/ShowFile.do?DocNumber=5376649>

#### IV. ESTIMATED CARBON DIOXIDE REDUCTIONS ASSOCIATED WITH CIP

##### A. METHODOLOGY

The CO<sub>2</sub> savings associated with CIP were calculated by first compiling the total annual electricity or natural gas savings reported by each utility for 2006 and 2007. These savings figures were verified by the OES as part of the CIP regulatory process described in Section I. Total annual CO<sub>2</sub> savings were then calculated by multiplying the savings totals by the appropriate emissions factor (average pounds of CO<sub>2</sub> emitted per MWh of electricity or MCF of natural gas).

Since electricity consumed in Minnesota is generated from a variety of sources, both inside and outside the state, it is appropriate to use a regional CO<sub>2</sub> emissions factor to calculate the avoided CO<sub>2</sub> emissions due to the electricity savings associated with CIP. For this report, the most recent CO<sub>2</sub> emissions factor for the Midwest Reliability Organization (MRO) region, 1,810 lbs of CO<sub>2</sub> per MWh, was selected. This figure is reported annually by the Minnesota Pollution Control Agency to the Minnesota Department of Commerce and Public Utilities Commission.<sup>8</sup> For natural gas, an average CO<sub>2</sub> emissions factor of 121 lbs of CO<sub>2</sub> per MCF was used based on the chemical composition of natural gas.<sup>9</sup>

Note that the energy and CO<sub>2</sub> savings reported are *incremental* – that is, they are the first-year savings that result from new participants in existing or new programs. The total, or *cumulative* savings occurring in a given year also include measures enacted in previous years. However, since it is problematic to track cumulative savings, the OES only tracks incremental savings.

##### B. TOTAL ENERGY AND CARBON DIOXIDE SAVINGS

The table below summarizes the total energy and carbon dioxide savings generated through CIP in 2006 and 2007.

**Table 1: Electric and Gas CIP Incremental Savings in 2006 and 2007**

|              | Electric Savings (kWh) | CO <sub>2</sub> Savings (tons) | Gas Savings (MCF) | CO <sub>2</sub> Savings (tons) |
|--------------|------------------------|--------------------------------|-------------------|--------------------------------|
| <b>2006</b>  | 411,998,552            | 360,499                        | 2,095,047         | 126,750                        |
| <b>2007</b>  | 463,542,698            | 405,600                        | 1,917,144         | 115,987                        |
| <b>Total</b> | 875,541,250            | 766,099                        | 4,012,191         | 242,737                        |

<sup>8</sup> The MPCA reports updated regional average emissions factors annually to the Minnesota Department of Commerce and Public Utilities Commission for use in preparation of environmental disclosures, as required by the Commission in its Order Clarifying Disclosure Requirements and Setting Procedural Schedule issued September 3, 2002. The most recent figures as of the writing of this report were from 2005, as reported in the October 30, 2008 letter from MPCA filed under docket no. E,G999/CI-00-1343.

<sup>9</sup> Since natural gas is a primary fuel with high degree of uniformity in composition, an emissions factor of 121 lbs of CO<sub>2</sub> per MCF is generally used to compute CO<sub>2</sub> savings.

C. SAVINGS BY UTILITY

Tables 2a and 2b list the kWh/MCF CIP savings, actual spending, and estimated CO<sub>2</sub> savings by utility in 2006 and 2007. The MRO regional CO<sub>2</sub> emissions factor for electricity described above was used to estimate the CO<sub>2</sub> savings for each electric utility. Note that the actual CO<sub>2</sub> saving for each utility varies according to the mix of generation sources serving the utility's territory throughout the year. Depending on the utility's mix of generating assets and power purchasing arrangements, different utilities have different carbon intensities in the electricity provided to their customers. However, since it difficult to compute an individual CO<sub>2</sub> emissions factor for each utility based on available sources, a constant regional emissions factor was used instead.

**Table 2a: 2006 CIP Savings by Utility**

| Utility                                  | kWh Savings        | Spending            | CO <sub>2</sub> Savings (tons) |
|--|--------------------|---------------------|--------------------------------|
| <b>Electric IOUs</b>                     |                    |                     |                                |
| Alliant Energy                           | 13,636,911         | \$1,967,904         | 12,341                         |
| Minnesota Power                          | 45,940,938         | \$3,794,856         | 41,577                         |
| Otter Tail Power                         | 14,027,710         | \$1,936,644         | 12,695                         |
| Xcel Energy                              | 256,386,037        | \$42,880,121        | 232,029                        |
| <b>Totals - IOU Electrics</b>            | <b>329,991,596</b> | <b>\$50,579,525</b> | <b>298,642</b>                 |
| <b>Electric Coops</b>                    |                    |                     |                                |
| Dairyland Power Coop                     | 2,482,889          | \$1,966,538         | 2,247                          |
| East River Electric Power Coop, Inc.     | 383,959            | \$285,030           | 347                            |
| Great River Energy                       | 32,076,202         | \$18,194,936        | 29,029                         |
| Minnesota Valley Coop L&P                | 469,500            | \$190,467           | 425                            |
| Minnkota Power Coop                      | 4,634,379          | \$2,290,124         | 4,194                          |
| Sioux Valley Southwestern Electric       | 1,989,511          | \$73,446            | 1,801                          |
| <b>Totals - Electric Coops</b>           | <b>42,036,440</b>  | <b>\$23,000,541</b> | <b>38,043</b>                  |
| <b>Electric Municipals<sup>1</sup></b>   |                    |                     |                                |
| Alexandria Light & Power                 | 933,739            | \$229,616           | 845                            |
| Benson Municipal Utilities               | 100,633            | \$108,605           | 91                             |
| Brainerd Public Utilities                | 2,314,037          | \$144,782           | 2,094                          |
| City of Anoka                            | 1,425,198          | \$308,336           | 1,290                          |
| City of Jackson                          | 160,278            | \$42,215            | 145                            |
| City of Luverne                          | 721,622            | \$177,763           | 653                            |
| Detroit Lakes Public Utility             | 373,863            | \$139,800           | 338                            |
| East Grand Forks Water & Light Dept.     | 162,414            | \$368,424           | 147                            |
| Glencoe Light & Power Commission         | 317,264            | \$71,214            | 287                            |
| Grand Rapids Public Utilities Commission | 1,853,086          | \$103,132           | 1,677                          |
| Hibbing Public Utilities Commission      | 11,655             | \$73,827            | 11                             |
| Hutchinson Utilities Commission          | 1,264,611          | \$166,495           | 1,144                          |
| Marshall Municipal Utilities             | 1,793,001          | \$326,403           | 1,623                          |
| Melrose Public Utilities                 | 1,094,520          | \$88,764            | 991                            |
| Minnesota Municipal Power Agency         | 856,689            | \$636,000           | 775                            |
| Moorhead Public Service                  | 1,282,024          | \$381,579           | 1,160                          |



**Table 2a: 2006 CIP Savings by Utility (continued)**

| <b>Utility</b>                      | <b>kWh Savings</b> | <b>Spending</b>     | <b>CO<sub>2</sub> Savings (tons)</b> |
|-------------------------------------|--------------------|---------------------|--------------------------------------|
| New Ulm Public Utilities            | 1,889,810          | \$400,271           | 1,710                                |
| Shakopee Public Utilities           | 4,462,076          | \$623,290           | 4,038                                |
| Southern MN Municipal Power Agency  | 4,125,429          | \$1,404,014         | 3,734                                |
| St. James Municipal Light & Power   | 73,708             | \$49,537            | 67                                   |
| Thief River Falls Municipal Utility | 791,592            | \$205,741           | 716                                  |
| Triad (Austin, Owatonna, Rochester) | 12,399,386         | \$2,028,425         | 11,221                               |
| Wadena Light & Water                | 28,599             | \$48,418            | 26                                   |
| Willmar Municipal Utilities         | 775,110            | \$287,085           | 701                                  |
| Windom Municipal Utilities          | 83,415             | \$74,605            | 75                                   |
| Worthington Public Utilities        | 676,758            | \$176,833           | 612                                  |
| <b>Totals - Electric Municipals</b> | <b>39,970,517</b>  | <b>\$8,665,174</b>  | <b>36,173</b>                        |
| <b>TOTALS - ELECTRIC CIP</b>        | <b>411,998,552</b> | <b>\$82,245,240</b> | <b>372,859</b>                       |
| <b>Utility</b>                      | <b>MCF Savings</b> | <b>Spending</b>     | <b>CO<sub>2</sub> Savings (tons)</b> |
| <b>Gas IOUs</b>                     |                    |                     |                                      |
| Alliant                             | 23,788             | \$478,471           | 1,439                                |
| CenterPoint Energy                  | 937,274            | \$7,374,410         | 56,705                               |
| Great Plains Natural Gas            | 13,877             | \$241,329           | 840                                  |
| Greater Minnesota Gas               | 1,709              | \$14,190            | 103                                  |
| Minnesota Energy Resources - NMU    | 22,230             | \$405,244           | 1,345                                |
| Minnesota Energy Resources - PNG    | 151,518            | \$1,750,611         | 9,167                                |
| Xcel Energy                         | 927,029            | \$5,076,771         | 56,085                               |
| <b>Totals - Gas IOUs</b>            | <b>2,077,425</b>   | <b>\$15,341,026</b> | <b>125,684</b>                       |
| <b>Gas Municipals</b>               |                    |                     |                                      |
| Duluth Dept. of Public Works        | 8,087              | \$713,939           | 489                                  |
| Hutchinson Utilities Commission     | 922                | \$28,900            | 56                                   |
| Triad (Austin & Owatonna)           | 8,613              | \$183,128           | 521                                  |
| <b>Totals - Gas Municipals</b>      | <b>17,622</b>      | <b>\$925,967</b>    | <b>1,066</b>                         |
| <b>TOTALS - GAS CIP</b>             | <b>2,095,047</b>   | <b>\$16,266,993</b> | <b>126,750</b>                       |

<sup>1</sup> Municipalities include only large utilities that reported energy savings for 2006 and 2007. The City of Virginia is not included since it had not submitted a CIP filing by the time of this report.

**Table 2b: 2007 CIP Savings by Utility**

| <b>Utility</b>                           | <b>kWh Savings</b> | <b>Spending</b>     | <b>CO<sub>2</sub> Savings<br/>(tons)</b> |
|--|--------------------|---------------------|--|
| <b>Electric IOUs</b>                     |                    |                     |  |
| Alliant Energy                           | 16,990,441         | \$2,562,634         | 15,376                                   |
| Minnesota Power                          | 44,168,014         | \$3,908,222         | 39,972                                   |
| Otter Tail Power                         | 11,617,820         | \$1,862,501         | 10,514                                   |
| Xcel Energy                              | 259,207,821        | \$47,382,643        | 234,583                                  |
| <b>Totals - IOU Electrics</b>            | <b>331,984,096</b> | <b>\$55,716,000</b> | <b>300,446</b>                           |
| <b>Electric Coops</b>                    |                    |                     |  |
| Dairyland Power Coop                     | 3,318,591          | \$2,053,709         | 3,003                                    |
| East River Electric Power Coop, Inc.     | 295,529            | \$284,979           | 267                                      |
| Great River Energy                       | 58,060,845         | \$20,872,525        | 52,545                                   |
| Minnesota Valley Coop L&P                | 554,550            | \$246,184           | 502                                      |
| Minnkota Power Coop                      | 5,061,664          | \$2,284,562         | 4,581                                    |
| Sioux Valley Southwestern Electric       | 2,164,796          | \$73,086            | 1,959                                    |
| <b>Totals - Electric Coops</b>           | <b>69,455,975</b>  | <b>\$25,815,045</b> | <b>62,858</b>                            |
| <b>Electric Municipals<sup>1</sup></b>   |                    |                     |  |
| Alexandria Light & Power                 | 1,266,653          | \$280,627           | 1,146                                    |
| Benson Municipal Utilities               | 271,042            | \$128,009           | 245                                      |
| Brainerd Public Utilities                | 1,956,427          | \$199,998           | 1,771                                    |
| City of Anoka                            | 804,650            | \$350,447           | 728                                      |
| City of Jackson                          | 760,172            | \$57,312            | 688                                      |
| City of Luverne                          | 558,482            | \$114,785           | 505                                      |
| Detroit Lakes Public Utility             | 606,008            | \$127,047           | 548                                      |
| East Grand Forks Water & Light Dept.     | 593,362            | \$342,030           | 537                                      |
| Glencoe Light & Power Commission         | 703,549            | \$93,836            | 637                                      |
| Grand Rapids Public Utilities Commission | 1,683,822          | \$110,238           | 1,524                                    |
| Hibbing Public Utilities Commission      | 178,637            | \$99,758            | 162                                      |
| Hutchinson Utilities Commission          | 5,624,104          | \$251,862           | 5,090                                    |
| Marshall Municipal Utilities             | 3,628,227          | \$343,660           | 3,284                                    |
| Melrose Public Utilities                 | 181,599            | \$37,420            | 164                                      |
| Minnesota Municipal Power Agency         | 2,045,632          | \$681,336           | 1,851                                    |
| Moorhead Public Service                  | 1,257,909          | \$407,689           | 1,138                                    |
| New Ulm Public Utilities                 | 2,129,389          | \$335,831           | 1,927                                    |
| Shakopee Public Utilities                | 7,653,643          | \$727,792           | 6,927                                    |
| Southern MN Municipal Power Agency       | 6,112,231          | \$1,629,377         | 5,532                                    |
| St. James Municipal Light & Power        | 329,668            | \$49,039            | 298                                      |
| Thief River Falls Municipal Utility      | 722,322            | \$223,860           | 654                                      |
| Triad (Austin, Owatonna, Rochester)      | 19,895,990         | \$2,516,333         | 18,006                                   |
| Wadena Light & Water                     | 13,532             | \$54,392            | 12                                       |
| Willmar Municipal Utilities              | 1,186,110          | \$305,235           | 1,073                                    |
| Windom Municipal Utilities               | 1,480,922          | \$74,856            | 1,340                                    |
| Worthington Public Utilities             | 458,545            | \$165,612           | 415                                      |
| <b>Totals - Electric Municipals</b>      | <b>62,102,627</b>  | <b>\$9,708,381</b>  | <b>56,203</b>                            |
| <b>TOTALS - ELECTRIC CIP</b>             | <b>463,542,698</b> | <b>\$91,239,426</b> | <b>419,506</b>                           |

**Table 2b: 2007 CIP Savings by Utility (continued)**

| <b>Utility</b>                     | <b>kWh Savings</b> | <b>Spending</b>     | <b>CO<sub>2</sub> Savings<br/>(tons)</b> |
|------------------------------------|--------------------|---------------------|--|
| <b>Gas IOUs</b>                    |                    |                     |  |
| Alliant                            | 15,096             | \$282,637           | 913                                      |
| CenterPoint Energy                 | 825,031            | \$7,553,362         | 49,914                                   |
| Great Plains Natural Gas           | 17,658             | \$244,304           | 1,068                                    |
| Greater Minnesota Gas <sup>2</sup> |                    |                     |  |
| Minnesota Energy Resources - NMU   | 22,756             | \$373,490           | 1,377                                    |
| Minnesota Energy Resources - PNG   | 118,899            | \$1,561,483         | 7,193                                    |
| Xcel Energy                        | 888,460            | \$5,576,438         | 53,752                                   |
| <b>Totals - Gas IOUs</b>           | <b>1,887,900</b>   | <b>\$15,591,714</b> | <b>114,218</b>                           |
| <b>Gas Municipals</b>              |                    |                     |  |
| Duluth Dept. of Public Works       | 4,208              | \$473,371           | 255                                      |
| Hutchinson Utilities Commission    | 5,872              | \$150,104           | 355                                      |
| Triad (Austin & Owatonna)          | 19,164             | \$191,241           | 1,159                                    |
| <b>Totals - Gas Municipals</b>     | <b>29,244</b>      | <b>\$814,716</b>    | <b>1,769</b>                             |
| <b>TOTALS - GAS CIP</b>            | <b>1,917,144</b>   | <b>\$16,406,430</b> | <b>115,987</b>                           |

<sup>1</sup> Municipalities include only large utilities that reported energy savings for 2006 and 2007. The City of Virginia is not included since it had not submitted a CIP filing by the time of this report.

<sup>2</sup> Greater Minnesota Gas did not submit a 2007 CIP status report by the time of this report.

*D. SAVINGS BY MARKET SECTOR*

Tables 3a and 3b report energy savings by market sector (residential, commercial/industrial/agricultural, other) for each utility.

The savings by market sector was determined as follows. For IOUs, each CIP project is classified by market sector. The savings in each market sector were then determined by simply adding up the savings for all projects in that sector. For cooperatives and municipals, CIP projects are not typically classified in this manner and may span multiple sectors. Therefore, the savings in each sector was estimated by the proportion of total project spending in that sector.

**Table 3a: 2006 CIP Savings by Market Sector**

|   | <b>Residential<br/>(kWh)</b> | <b>C/I/Ag<br/>(kWh)</b> | <b>Other<br/>(kWh)</b> | <b>Total<br/>(kWh)</b> |
|---|------------------------------|-------------------------|------------------------|------------------------|
| <b>Electric IOUs</b>                      |                              |                         |                        |                        |
| Alliant Energy                            | 550,395                      | 13,086,516              | 0                      | 13,636,911             |
| Minnesota Power                           | 9,080,281                    | 36,860,657              | 0                      | 45,940,938             |
| Otter Tail Power                          | 2,687,537                    | 11,340,173              | 0                      | 14,027,710             |
| Xcel Energy                               | 12,322,185                   | 244,063,852             | 0                      | 256,386,037            |
| <b>Totals - IOU Electrics</b>             | <b>24,640,398</b>            | <b>305,351,198</b>      | <b>0</b>               | <b>329,991,596</b>     |
| <b>Electric Coops</b>                     |                              |                         |                        |                        |
| Dairyland Power Coop                      | 2,433,227                    | 49,658                  | 0                      | 2,482,889              |
| East River Electric Power Coop, Inc.      | 380,884                      | 0                       | 0                      | 383,959                |
| Great River Energy                        | 15,238,954                   | 16,837,248              | 0                      | 32,076,202             |
| Minnesota Valley Coop Light & Power Assoc | 99,385                       | 370,115                 | 0                      | 469,500                |
| Minnkota Power Coop                       | 3,292,621                    | 957,734                 | 0                      | 4,634,379              |
| Sioux Valley Southwestern Electric        | 1,805,610                    | 183,901                 | 0                      | 1,989,511              |
| <b>Totals - Electric Coops</b>            | <b>23,250,681</b>            | <b>18,398,655</b>       | <b>0</b>               | <b>42,036,440</b>      |
| <b>Electric Municipals<sup>1</sup></b>    |                              |                         |                        |                        |
| Alexandria Light & Power                  | 369,684                      | 446,655                 | 0                      | 933,739                |
| Benson Municipal Utilities                | 85,714                       | 14,919                  | 0                      | 100,633                |
| Brainerd Public Utilities                 | 130,830                      | 2,285,437               | 6,600                  | 2,314,037              |
| City of Anoka                             | 114,944                      | 1,278,639               | 0                      | 1,425,198              |
| City of Jackson                           | 151,974                      | 8,304                   | 0                      | 160,278                |
| City of Luverne                           | 197,971                      | 523,651                 | 0                      | 721,622                |
| Detroit Lakes Public Utility              | 338,022                      | 35,841                  | 0                      | 373,863                |
| East Grand Forks Water & Light Dept.      | 73,437                       | 49,352                  | 39,625                 | 162,414                |
| Glencoe Light & Power Commission          | 35,268                       | 281,996                 | 0                      | 317,264                |
| Grand Rapids Public Utilities Commission  | 1,134,195                    | 718,892                 | 0                      | 1,853,086              |
| Hibbing Public Utilities Commission       | 0                            | 0                       | 11,655                 | 11,655                 |
| Hutchinson Utilities Commission           | 991,376                      | 173,694                 | 0                      | 1,264,611              |
| Marshall Municipal Utilities              | 615,269                      | 1,177,732               | 0                      | 1,793,001              |
| Melrose Public Utilities                  | 84,280                       | 1,010,240               | 0                      | 1,094,520              |
| Minnesota Municipal Power Agency          | 132,144                      | 724,545                 | 0                      | 856,689                |
| Moorhead Public Service                   | 126,201                      | 1,155,823               | 0                      | 1,282,024              |
| New Ulm Public Utilities                  | 110,372                      | 1,671,988               | 0                      | 1,889,810              |
| Shakopee Public Utilities                 | 1,707,194                    | 2,043,252               | 710,379                | 4,462,076              |
| Southern MN Municipal Power Agency        | 1,256,588                    | 2,819,285               | 8,408                  | 4,125,429              |
| St. James Municipal Light & Power         | 44,381                       | 1,147                   | 28,180                 | 73,708                 |
| Thief River Falls Municipal Utility       | 724,194                      | 67,399                  | 0                      | 791,592                |
| Triad (Austin, Owatonna, Rochester)       | 1,593,468                    | 10,744,787              | 61,131                 | 12,399,386             |
| Wadena Light & Water                      | 28,599                       | 0                       | 0                      | 28,599                 |
| Willmar Municipal Utilities               | 202,875                      | 572,236                 | 0                      | 775,110                |
| Windom Municipal Utilities                | 70,023                       | 11,651                  | 1,741                  | 83,415                 |
| Worthington Public Utilities              | 206,158                      | 470,600                 | 0                      | 676,758                |
| <b>Totals - Electric Municipals</b>       | <b>10,525,160</b>            | <b>28,288,063</b>       | <b>867,719</b>         | <b>39,970,517</b>      |
| <b>TOTALS - ELECTRIC CIP</b>              | <b>58,416,239</b>            | <b>352,037,917</b>      | <b>867,719</b>         | <b>411,998,552</b>     |

**Table 3a: 2006 CIP Savings by Market Sector (continued)**

|                                  | <b>Residential<br/>(kWh)</b> | <b>C/I/Ag<br/>(kWh)</b> | <b>Other<br/>(kWh)</b> | <b>Total<br/>(kWh)</b> |
|----------------------------------|------------------------------|-------------------------|------------------------|------------------------|
| <b>Gas IOUs</b>                  |                              |                         |                        |                        |
| Alliant                          | 7,764                        | 16,024                  | 0                      | <b>23,788</b>          |
| CenterPoint Energy               | 178,162                      | 759,112                 | 0                      | <b>937,274</b>         |
| Great Plains Natural Gas         | 6,962                        | 6,915                   | 0                      | <b>13,877</b>          |
| Greater Minnesota Gas            | 1,709                        | 0                       | 0                      | <b>1,709</b>           |
| Minnesota Energy Resources - NMU | 9,592                        | 12,638                  | 0                      | <b>22,230</b>          |
| Minnesota Energy Resources - PNG | 54,333                       | 97,185                  | 0                      | <b>151,518</b>         |
| Xcel Energy                      | 158,043                      | 768,986                 | 0                      | <b>927,029</b>         |
| <b>Totals - Gas IOUs</b>         | <b>416,565</b>               | <b>1,660,860</b>        | <b>0</b>               | <b>2,077,425</b>       |
| <b>Gas Municipals</b>            |                              |                         |                        |                        |
| Duluth Dept. of Public Works     | 8,087                        | 0                       | 0                      | 8,087                  |
| Hutchinson Utilities Commission  | 922                          | 0                       | 0                      | 922                    |
| Triad (Austin & Owatonna)        | 7,508                        | 1,105                   | 0                      | 8,613                  |
| <b>Totals - Gas Municipals</b>   | <b>16,517</b>                | <b>1,105</b>            | <b>0</b>               | <b>17,622</b>          |
| <b>TOTALS - GAS CIP</b>          | <b>433,082</b>               | <b>1,661,965</b>        | <b>0</b>               | <b>2,095,047</b>       |

<sup>1</sup> Municipalities include only large utilities that reported energy savings for 2006 and 2007. The City of Virginia is not included since it had not submitted a CIP filing by the time of this report.

**Table 3b: 2007 CIP Savings by Market Sector**

|   | <b>Residential<br/>(kWh)</b> | <b>C/I/Ag<br/>(kWh)</b> | <b>Other<br/>(kWh)</b> | <b>Total<br/>(kWh)</b> |
|---|------------------------------|-------------------------|------------------------|------------------------|
| <b>Electric IOUs</b>                      |                              |                         |                        |                        |
| Alliant Energy                            | 769,616                      | 16,220,825              | 0                      | 16,990,441             |
| Minnesota Power                           | 9,479,950                    | 34,688,064              | 0                      | 44,168,014             |
| Otter Tail Power                          | 2,721,259                    | 8,896,561               | 0                      | 11,617,820             |
| Xcel Energy                               | 13,838,906                   | 245,368,915             | 0                      | 259,207,821            |
| <b>Totals - IOU Electrics</b>             | <b>26,809,731</b>            | <b>305,174,365</b>      | <b>0</b>               | <b>331,984,096</b>     |
| <b>Electric Coops</b>                     |                              |                         |                        |                        |
| Dairyland Power Coop                      | 3,252,216                    | 66,372                  | 0                      | 3,318,591              |
| East River Electric Power Coop, Inc.      | 292,304                      | 0                       | 0                      | 295,529                |
| Great River Energy                        | 23,416,921                   | 34,643,924              | 0                      | 58,060,845             |
| Minnesota Valley Coop Light & Power Assoc | 116,215                      | 438,335                 | 0                      | 554,550                |
| Minnkota Power Coop                       | 3,264,304                    | 705,152                 | 0                      | 5,061,664              |
| Sioux Valley Southwestern Electric        | 1,955,346                    | 209,450                 | 0                      | 2,164,796              |
| <b>Totals - Electric Coops</b>            | <b>32,297,306</b>            | <b>36,063,233</b>       | <b>0</b>               | <b>69,455,975</b>      |
| <b>Electric Municipals</b>                |                              |                         |                        |                        |
| Alexandria Light & Power                  | 432,392                      | 471,661                 | 0                      | 1,266,653              |
| Benson Municipal Utilities                | 103,111                      | 167,931                 | 0                      | 271,042                |
| Brainerd Public Utilities                 | 278,550                      | 1,677,877               | 0                      | 1,956,427              |
| City of Anoka                             | 88,826                       | 671,280                 | 0                      | 804,650                |
| City of Jackson                           | 131,836                      | 628,336                 | 0                      | 760,172                |
| City of Luverne                           | 163,152                      | 0                       | 0                      | 558,482                |

**Table 3b: 2007 CIP Savings by Market Sector (continued)**

|  | <b>Residential<br/>(kWh)</b> | <b>C/I/Ag<br/>(kWh)</b> | <b>Other<br/>(kWh)</b> | <b>Total<br/>(kWh)</b> |
|--|------------------------------|-------------------------|------------------------|------------------------|
| Detroit Lakes Public Utility             | 155,179                      | 450,829                 | 0                      | 606,008                |
| East Grand Forks Water & Light Dept.     | 109,728                      | 475,207                 | 8,427                  | 593,362                |
| Glencoe Light & Power Commission         | 34,172                       | 206,180                 | 463,197                | 703,549                |
| Grand Rapids Public Utilities Commission | 1,102,515                    | 581,307                 | 0                      | 1,683,822              |
| Hibbing Public Utilities Commission      | 152,939                      | 13,413                  | 12,285                 | 178,637                |
| Hutchinson Utilities Commission          | 1,682,600                    | 3,660,685               | 0                      | 5,624,104              |
| Marshall Municipal Utilities             | 734,139                      | 2,882,004               | 0                      | 3,628,227              |
| Melrose Public Utilities                 | 16,655                       | 164,944                 | 0                      | 181,599                |
| Minnesota Municipal Power Agency         | 207,760                      | 1,025,771               | 812,101                | 2,045,632              |
| Moorhead Public Service                  | 140,857                      | 1,117,052               | 0                      | 1,257,909              |
| New Ulm Public Utilities                 | 250,690                      | 1,541,796               | 267,253                | 2,129,389              |
| Shakopee Public Utilities                | 3,746,462                    | 3,250,479               | 646,452                | 7,653,643              |
| Southern MN Municipal Power Agency       | 4,107,720                    | 1,997,249               | 7,262                  | 6,112,231              |
| St. James Municipal Light & Power        | 230,520                      | 86,337                  | 12,811                 | 329,668                |
| Thief River Falls Municipal Utility      | 581,276                      | 141,046                 | 0                      | 722,322                |
| Triad (Austin, Owatonna, Rochester)      | 3,465,589                    | 16,363,026              | 67,375                 | 19,895,990             |
| Wadena Light & Water                     | 13,261                       | 271                     | 0                      | 13,532                 |
| Willmar Municipal Utilities              | 319,668                      | 866,442                 | 0                      | 1,186,110              |
| Windom Municipal Utilities               | 107,012                      | 1,373,910               | 0                      | 1,480,922              |
| Worthington Public Utilities             | 159,971                      | 298,574                 | 0                      | 458,545                |
| <b>Totals - Electric Municipals</b>      | <b>18,516,580</b>            | <b>40,113,606</b>       | <b>2,297,163</b>       | <b>62,102,627</b>      |
| <b>TOTALS - ELECTRIC CIP</b>             | <b>77,623,617</b>            | <b>381,351,204</b>      | <b>2,297,163</b>       | <b>463,542,698</b>     |
|  |                              |                         |                        |                        |
|  | <b>Residential<br/>(MCF)</b> | <b>C/I/Ag<br/>(MCF)</b> | <b>Other<br/>(MCF)</b> | <b>Total<br/>(MCF)</b> |
| <b>Gas IOUs</b>                          |                              |                         |                        |                        |
| Alliant                                  | 7,950                        | 7,146                   | 0                      | 15,096                 |
| CenterPoint Energy                       | 164,971                      | 660,060                 | 0                      | 825,031                |
| Great Plains Natural Gas                 | 5,338                        | 12,320                  | 0                      | 17,658                 |
| Greater Minnesota Gas <sup>2</sup>       |                              |                         |                        |                        |
| Minnesota Energy Resources - NMU         | 7,062                        | 15,694                  | 0                      | 22,756                 |
| Minnesota Energy Resources - PNG         | 42,341                       | 76,558                  | 0                      | 118,899                |
| Xcel Energy                              | 147,851                      | 740,609                 | 0                      | 888,460                |
| <b>Totals - Gas IOUs</b>                 | <b>375,513</b>               | <b>1,512,387</b>        | <b>0</b>               | <b>1,887,900</b>       |
| <b>Gas Municipals</b>                    |                              |                         |                        |                        |
| Duluth Dept. of Public Works             | 3,933                        | 275                     | 0                      | 4,208                  |
| Hutchinson Utilities Commission          | 1,257                        | 0                       | 4,615                  | 5,872                  |
| Triad (Austin & Owatonna)                | 8,669                        | 9,922                   | 573                    | 19,164                 |
| <b>Totals - Gas Municipals</b>           | <b>13,859</b>                | <b>10,197</b>           | <b>5,188</b>           | <b>29,244</b>          |
| <b>TOTALS - GAS CIP</b>                  | <b>389,372</b>               | <b>1,522,584</b>        | <b>5,188</b>           | <b>1,917,144</b>       |

<sup>1</sup> Municipalities include only large utilities that reported energy savings for 2006 and 2007. The City of Virginia is not included since it had not submitted a CIP filing by the time of this report.

<sup>2</sup> Greater Minnesota Gas did not submit a 2007 CIP status report by the time of this report.

## V. CONCLUSION

The savings levels shown for 2006 and 2007 represent utility activities prior to the passage of the NGEA, where utilities were focusing their program activities on achieving a desired level of spending. Meeting the 1.5 percent energy conservation goal will require a tremendous increase in program activity. As can be seen in table 4 below, the energy savings required to meet the energy savings goal is approximately double the 2007 savings achievements of electric utilities and nearly 2.5 times the 2007 savings achievements for natural gas utilities. The CO<sub>2</sub> savings associated with this level of energy savings would potentially increase by the same factors.

**Table 4: 2005 Minnesota Energy Consumption and Approximate Energy Savings Goal<sup>10</sup>**

| <b>Electricity</b>       | <b>kWh</b>     | <b>Percentage of 2007 achievements</b> |
|--------------------------|----------------|--|
| 2005 MN Consumption      | 66,568,000,000 |  |
| Less Opt-Out Consumption | 59,572,713,959 |  |
| 1.5% Goal                | 893,590,709    | 193%                                   |
| <b>Natural Gas</b>       | <b>MCF</b>     | <b>Percentage of 2007 achievements</b> |
| 2005 MN Consumption      | 328,955,000    |  |
| Less Opt-Out Consumption | 309,407,179    |  |
| 1.5% Goal                | 4,641,108      | 242%                                   |

Meeting this level of savings is not without its challenges, and will require strong efforts by all parties involved, including utilities, their trade allies, energy service providers, the OES, and energy consumers.

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<sup>10</sup> All consumption figures from the Minnesota Utility Data Book, 1965 – 2005, [http://www.state.mn.us/mn/externalDocs/Commerce/Utility\\_Data\\_Book\\_1965-2000\\_030603120425\\_UtilityDataBook65thru05.pdf](http://www.state.mn.us/mn/externalDocs/Commerce/Utility_Data_Book_1965-2000_030603120425_UtilityDataBook65thru05.pdf)