

# **Annual Legislative Proposal Report On Greenhouse Gas Emission Reductions To The Minnesota Legislature**

**Minn. Stat. § 216H.07, subd. 4**

**SUBMITTED BY**

**MINNESOTA DEPARTMENT OF COMMERCE**

**AND**

**MINNESOTA POLLUTION CONTROL AGENCY**

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## INTRODUCTION

This is the fourth annual report on legislative proposals to achieve greenhouse gas (GHG) emission reductions. It is co-authored by the Minnesota Department of Commerce Division of Energy Resources (DER) and the Minnesota Pollution Control Agency (MPCA). Statutory background for this report is discussed in Appendix A.

**GREENHOUSE GAS EMISSIONS UPDATE.** Minn. Stat. § 216H.07, subd. 3, requires a report on Minnesota's GHG emission reduction progress on odd numbered years. The most recent report on Minnesota's GHG emissions was provided in January 2010, and the next required report is due January 15, 2012. However, Commerce and MPCA want to provide the Legislature with a brief summary of what is known about emissions since our January 2010 report. The U.S. Department of Energy (DOE), Energy Information Agency (EIA) recently released its national GHG emissions estimates for 2009, the most recent data available. Over the past ten years, the trend in Minnesota's emissions has tended to be consistent with the national trend reported by the EIA. The EIA reports that U.S. GHG emissions continued to drop in 2009, representing about a 9% reduction in emissions nationally from 2005 levels, and this decrease is likely due in large part to the weak national economy.

**Effects of a Changing Climate in Minnesota.** Extensive weather observations recorded over time indicate that Minnesota's climate is warming, and our ecosystems are already showing the effects.<sup>1</sup> Examples of these early signs include:

- Ice is forming later and breaking up earlier on Minnesota lakes. Ice-in dates have shifted later by 7.5 days per decade between 1979-2002.
- Between 1973 and 2008, maximum seasonal ice cover on the Great Lakes declined by about 30%.
- Warm water fish, notably largemouth bass and bluegill, are becoming more common in northern Minnesota lakes.
- Eleven northern tree species such as quaking aspen, paper birch and sugar maple appear to be migrating north (through seed dispersal) at rates approaching 6 miles per decade.
- Shorter winters are reducing available time for winter logging.
- Winter ranges for ring-necked ducks, red-breasted mergansers, American black ducks, and green winged all moved more than 150 miles north over the last 40 years.
- 18 of 20 migratory bird species in the northern prairie region are migrating earlier in the spring.

This report provides an overview of Minnesota's programs and policies that impact GHG emissions. The State of Minnesota continues to be a leader in renewable energy, renewable fuels, energy efficiency and related efforts that reduce emissions associated with energy production and use. The report addresses Minnesota's progress in achieving the targets set in the Next Generation Energy Act of 2007<sup>2</sup> for energy conservation, renewable energy and GHG

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<sup>1</sup> Climate Change and Renewable Energy: Management Foundations. August 2011, Minnesota Department of Natural Resources.

<sup>2</sup> Laws of 2007, Chapter 136

emissions, and it discusses several challenges to achieving greater GHG reductions. Minnesota's efforts to begin adapting to our warming climate are also included.

## I. PROGRESS ON MAJOR PROGRAMS AND ACTIVITIES

### A. AGENCY SUSTAINABILITY PLANS – LEADING BY EXAMPLE

Executive Order 11-13, issued in April 2011, strengthens the requirements for state agency environmental, energy and transportation sustainability planning and implementation. Nearly two-thirds of state agencies and the Minnesota State Colleges and Universities (MnSCU) have updated sustainability plans for 2011. Examples of strategies<sup>3</sup> include:

- Installation of energy management systems and energy efficient lighting in state buildings;
- Shipping purchases in bulk packs;
- Reducing fuel consumption through staff business carpooling and use of efficient vehicles;
- Reducing waste generation (e.g. paper and plastic water bottles); and
- Increased recycling of materials.

Specific details of state agency strategies in the target areas can be found at <http://www.pca.state.mn.us/zihy5c9>.

The MPCA is in the early stages of revamping a solid waste and recycling data e-reporting system, with ability to collect recycling data from state agencies being at least a year away. In 2009, recycling from state agencies in the metro area resulted in 25,540 MTCO<sub>2</sub>e of GHG emissions avoided over landfilling the materials. Three state agencies also voluntarily report Tier 1 and Tier 2 emissions to The Climate Registry (MPCA, Metropolitan Council and Department of Natural Resources [DNR]). MPCA has reduced greenhouse gas emissions reported to The Climate Registry in 2010 by 10% from its 2008 baseline. Because of the legislatively-authorized switch to a third-party vendor, the Department of Administration is only able to report on recycling from eight facilities under its operational control for 2010.

In addition, Executive Order 11-12 requires state agencies to develop plans for conserving energy and installing energy management systems and efficient lighting in state facilities. Energy conservation activities in the 17 buildings that comprise the Capitol Complex resulted in a reduction of 4,408 tons of CO<sub>2</sub> in 2009.

**Landfill gas capture/renewable energy at state landfills.** In 2010, the MPCA unsuccessfully applied for assessment grant funding from EPA and for technical assistance from the National Renewable Energy Laboratory to perform renewable energy assessments at state-owned closed landfills, including solar, wind, biomass and biogas. MPCA has signed a lease for a 1 megawatt solar installation on the Oronoco-Olmsted County Closed Landfill; however, the private developer is still negotiating for favorable renewable energy pricing. Construction must begin by March 2012, or the lease can be terminated by either party.

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<sup>3</sup> More can be found at [www.pca.state.mn.us](http://www.pca.state.mn.us) by following the link to this section: [State Agency Sustainability Action Plans](#).

## **B. RENEWABLE ENERGY STANDARD**

Minn. Stat. § 216B.1691, commonly referred to as Minnesota's Renewable Energy Standard (RES), requires that electric utilities have at least 25 percent of their total retail sales from renewable energy sources by 2025. The RES also sets milestones at intervals along the time line for the portion of renewable electricity that a utility must have in its mix to meet its Minnesota sales. In 2010, the milestone targets for renewable energy was 15 percent of its Minnesota sales for Xcel Energy and 7 percent for other Minnesota electricity suppliers. In 2012, the targets will increase to 18 percent for Xcel Energy and 12 percent for other Minnesota electric providers.

In 2010, utilities reported 64,906,366 MWHs of total generation sales, with 7,093,698 MWHs, or about 10.9 percent, certified as renewable energy. This indicates that Minnesota electric utilities successfully met their 2010 renewable energy requirements.

## **C. CONSERVATION IMPROVEMENT PROGRAM**

The Minnesota Conservation Improvement Program (CIP) administered by Commerce requires Minnesota natural gas and electric utilities to spend a portion of their revenues in energy efficiency and conservation programs. The Next Generation Energy Act (Laws of 2007, Chapter 136) established an annual energy conservation goal for electric and natural gas utilities equal to 1.5 percent of average annual retail sales, beginning in 2010. The CIP savings goal is an integral part of any effort to reduce statewide CO<sub>2</sub> emissions.

Typical conservation improvement programs include rebates for high efficiency furnaces, lighting, and other devices; and services such as residential and commercial energy audits. Utility CIPs are funded through surcharges added to the electric and natural gas rates charged to utility customers. Minnesota's utilities achieved approximately 648 GWh of electricity and 1.8 million MCF of natural gas in total first-year savings from new CIP participants in 2009, resulting in approximately 702,000 tons of avoided GHG emissions

## **D. SMART GRID**

The nation's electric power industry is in the early phases of an effort to upgrade the information and control technologies to improve the reliability, security, and efficiency of the electric grid. Efforts to modernize the grid will be critical to maximizing the efficiency of electricity production, transmission, and distribution; and effectively incorporating the increased production of renewable energy into the wholesale electric markets. While there are no simple fixes to develop a modernized electric grid, some promising load-balancing resources, including Smart Grid technologies, may mitigate the need for transmission expansion and help establish a modern infrastructure.

Smart Grid technologies include devices that allow for two-way informational flows between electric suppliers and consumers. These technologies provide the capability to monitor transmission flow, electric generation, customer preferences, and individual appliances and other energy-using devices. New technologies and alliances are announced frequently, many focused on reducing peak energy demand and enabling greater energy efficiency. The Minnesota Public Utilities Commission currently requires utilities to report annually on past, current, and planned smart grid projects.

## **E. GUARANTEED ENERGY SAVINGS PROGRAM**

Executive Order 11-12 directs state agencies to identify and implement best management practices and cost effective energy efficiency and renewable energy improvements using Guaranteed Energy Savings Contracts, the State Energy Improvement Financing Program, or other implementation and financing mechanisms. Commerce formed the Office of Guaranteed Energy Savings Programs, which is developing a program for state agencies. The concept is to use the guaranteed savings from reduced utility expenses in the maintenance and operations budget, monetize as capital via a lease purchase agreement to make needed upgrades and modernize building environmental systems, with up to a 15-year term. This provides budget neutral funding with no taxpayer impact.

Commerce estimates that the Guaranteed Energy Savings Program will be available for state agencies early in 2012. Commerce will provide technical assistance to assure that state agency energy projects are using best practices to achieve verifiable energy savings and benefits. The program will then expand to include local governments and schools.

## **F. TRILLION BTU PROGRAM**

This program provided a \$5 million grant to the St. Paul Port Authority to establish a revolving loan program for cost-effective energy efficiency improvements at commercial, industrial, and non-profit facilities. Improvements financed through the Trillion BTU program include commissioning, system control improvements, lighting efficiency upgrades, HVAC system modifications, exterior envelope improvements, motor and pump efficiency improvements, process heat improvements, and other pre-approved energy efficiency improvements. This program provided an additional \$3.132 million grant in 2011 for a total of \$8.132 million for the revolving loan program.

The range of loan value permitted by the program is from \$10,000 to \$1 million. Eighteen loans have been approved to date, with an estimated annual energy savings of 86,650 mmBtus.

## **G. PUBLIC BUILDING ENHANCED ENERGY EFFICIENCY PROGRAM (PBEEEP)**

This program is offered to both state and local agencies to design and implement energy efficiency projects in public buildings. The Department of Administration Real Estate & Construction Services administers the program for state agencies. At this time, 895 state buildings in ten state agencies, with over 31.2 million square feet of space, are implementing energy conservation projects through the PBEEEP program.

PBEEEP is expanding to serve local governments in late 2011 to early 2012. Commerce administers the program for local governments, with the Center of Energy and Environment (CEE) under contract as its consultant to develop and administer the program in partnership with the State. All local government units in Minnesota, including K-12 schools, counties, cities, townships, and special districts, are eligible to participate in the program.

PBEEEP addresses energy efficiency in public buildings across Minnesota through a targeted Retrocommissioning/Recommissioning (RCx) and Retrofit focus. Energy affecting and energy consuming equipment, systems, and operations practices are evaluated to identify energy conservation opportunities that result in cost savings for the project site. Projects participating

in PBEEEP follow a 4-phase project process: screening, investigation, implementation, and verification. A key component of PBEEEP is that the program provides state agencies the opportunity to utilize co-funding through a combination of stimulus funding and lease-purchase financing without the need to have budgeted for this work in advance.

## **H. ELECTRIC VEHICLES**

The [Drive Electric Minnesota](#) partnership of local and state government, utilities, non-profits, and businesses continues to get our state "Electric Vehicle (EV) Ready." This includes developing infrastructure in Minnesota to support EVs and plug-in charging stations, including charging stations powered by wind or solar energy. Charging stations are already installed in both Minneapolis and St. Paul, with about 20 stations now planned for the metro area.

Ford Transit Connect EVs are now in operation at Hennepin County, the Metropolitan Airports Commission (MAC), Xcel Energy, State of Minnesota, City of Minneapolis and City of Saint Paul. Xcel Energy provided grants to partially cover the cost of these vehicles. The Department of Natural Resources and the City of Saint Paul have also procured EVs, and the HOURCAR sharing program has converted two of their Prius hybrids to plug-in EVs.

## **I. METROPOLITAN COUNCIL SOLAR FUNDING REQUEST**

Pursuant to the goals of the state's Next Generation Energy Act of 2007, the need to develop jobs in the region, and to reduce air emissions, the Metropolitan Council seeks to integrate renewable energy into its operating systems as part of its overall environmental strategy. The Council is asking for \$10 million to support two commercial-scale behind-the-meter solar facilities, which will substitute for power from the grid (reducing GHGs and fine particulate emissions [PM2.5], which are an air quality non-attainment concern). A 1.25 Mw system is envisioned for buffer land near a wastewater plant in Shakopee, and a 1.0 Mw with battery system on top of a Metro Transit building in downtown Minneapolis. Each system would be larger than any solar system in operation today in Minnesota.

## **J. CLIMATE ADAPTATION**

According to Dr. Mark W. Seeley, Professor in the College of Food, Agriculture and Natural Resource Sciences at the University of Minnesota, over the last three decades the Minnesota climate has shown four highly significant trends, all of which have triggered observable changes and are statistically detectable in the data from most of the state's climate stations. These are: warmer winters; higher minimum temperatures; increased episodes of high summer dew points; and greater annual precipitation, most profoundly reflected in seasonal snowfall and thunderstorm rainfall. The observed 100-year surface warming trend is generally between 1.5 and 2 degrees Fahrenheit. The warming over Minnesota since 1895 is possibly the most intense in the region.

In July 2009 the state formed an Interagency Climate Adaptation Team (ICAT) to begin exploring the potential effects of climate change in Minnesota and to develop an adaptation plan for the state. Members include the Departments of Agriculture, Commerce (DER), Health, Natural Resources, Public Safety (Division of Homeland Security and Emergency Management), Transportation, and the MPCA. ICAT efforts are ongoing.

ICAT's first work product, *Adapting to Climate Change in Minnesota - Preliminary Report* (August 2010), was a preliminary assessment of how climate change may affect Minnesota. It also set out a framework for future planning, investigation, and action.

The ICAT report describes effects of the warming climate. Some are likely to affect the state's air and water quality and some of the state's regulated facilities. These include:

- Effects on respiratory illnesses due to changes in the allergy season and pollen loads and types;
- Chemical and biological changes in lakes and streams;
- More spring floods and more frequent flash floods, leading to more overflows in coupled sanitary and storm sewer systems;
- Degradation in air quality and visibility; and
- Effects of changes in energy usage (less heating during the cold season but more air conditioning in the warm season).

The ICAT report lists steps now underway at the relevant state agencies, and ends with an inventory of research needs.

#### **K. PROPANE MARKET UPDATE**

Propane prices for heating fuel have ranged from \$1.85 to \$2.35 per gallon across the state during this fall heating season from October through November. The price of propane is influenced by many factors, including the prices of competing fuels in each market; the distance propane has to travel to reach a customer; and the volumes used by a customer. Propane is a by-product of natural gas and oil production. Consequently, it is affected by production of those fuels. Colder-than-normal weather can put extra pressure on propane prices during the high-demand winter season because there are no readily available sources of increased supply except for imports or reduction of exports. Cold weather early in the heating season can cause higher prices sooner rather than later, because early inventory withdrawals affect supply availability for the rest of the winter.

#### **L. CODES AND STANDARDS**

The Minnesota energy code has been in place since 1976. Minnesota's residential building energy code (Minn. Rules Ch. 1322) and commercial building energy code (Minn. Rules Ch. 1323) were last updated in June 2009. Buildings use 39% of the country's total energy, two-thirds of its electricity, and one-eighth of total water consumption. In light of these fundamental environmental issues, and the increasing cost of energy and current economic challenges, building energy efficiency is a key component of sound public policy. Energy codes and standards set minimum requirements for energy-efficient design and construction for new and renovated buildings that impact energy use and emissions for the life of the building.

In 2012 Commerce will assist the Department of Labor and Industry in adopting more stringent energy codes. The changes are estimated to achieve at least 10 percent increased energy savings for nonresidential buildings and 13 percent increased energy savings for residential buildings, with concurrent reductions in GHG emissions.



Commerce recently issued grants to Minnesota jurisdictions to conduct self-assessments of compliance with energy codes. The objectives of these grants are to help local code officials assess the baseline energy code compliance of new and renovated residential and commercial buildings, and to identify code enforcement procedural changes and training needs that could improve compliance rates.

#### **M. DISTRIBUTED GENERATION TASK FORCE**

Commerce hosted four workshops in the fall of 2011 to discuss the benefits, barriers, and issues associated with increased distributed generation capacity. Distributed generation is a decentralized energy production facility, such as a power plant, wind or solar generating facility, feeding into the distribution level power-grid and typically sized between 10 and 150 MW. Our electric utility infrastructure in this country is based on a system of large power plants feeding power to customers through a vast transmission and distribution system, collectively known as “the grid.”

Distributed generation is a concept where smaller, highly efficient power plants would be built along the existing grid, close to the end-user customer. It is similar in concept to the move from large central computers to desktop computers on a network. Minnesota, with our strong renewable energy capabilities, is ideally suited to take advantage of distributed generation across the state. Commerce plans to summarize its conclusions and recommendations based upon information gathered through the workshops by early 2012.

#### **N. NATURAL RESOURCE CONSERVATION AND LAND MANAGEMENT**

Significant carbon stocks are found in Minnesota’s forest, grasslands, aquatic systems and soils. Conservation of these resources is an important component of overall carbon management. Resource management trends have competing impacts on terrestrial and aquatic carbon sequestration. Passage and implementation of the Legacy Amendment has accelerated public acquisition and easement program, providing carbon sequestration benefits. In contrast, a significant net outflow of land enrolled in USDA private lands programs, like the Conservation Reserve Program, is contributing to a release of carbon from those lands. Strategic investments in natural resource conservation remain a significant tool to enhance carbon management in Minnesota. Continued investment in restoring, conserving and enhancing natural resources and native habitat through DNR and BWSR programs will have a significant carbon benefit for the state. DNR and BWSR continue to work on internal capacity to measure carbon impacts and identify management practices that can leverage carbon reductions.

Tested and emerging agricultural working lands conservation tools traditionally focused on water management goals also have potential for significant green house gas reduction benefits. Continued improvements in nutrient management will reduce nitrous oxide emissions. Soil conservation practices such as filter strips, riparian buffers and cover crops accelerate soil carbon accumulation. Ultimately, supporting the expansion of agricultural production systems based on perennial vegetation can have a dramatic impact on net carbon. Expanding livestock grazing and biomass production are both large scale opportunities for Minnesota. Partnerships between DNR, BWSR, PCA and MDA in efforts, such as the Ag Leadership Dialogue, are conservation efforts that can ultimately leverage substantial GHG benefits.

## II. POLICY IDEAS

Existing statutory authority is sufficient to support the programs discussed above. We are not recommending new policy ideas at this time.

## III. ACKNOWLEDGEMENTS

Commerce and the MPCA thank the Departments of Administration, Agriculture, Health, Natural Resources, Transportation, Employment and Economic Development, and the Metropolitan Council for contributing to this report.

## IV. APPENDIX

**A. STATUTORY BACKGROUND.** Minn. Stat. §216H.07 was enacted by the Minnesota legislature during the 2008 session. The following language sets forth the requirement to prepare this report for recommending policies to achieve the statutory emission goals by the timetable set forth in the statute.

### **Minn. Stat. 216H.07, Subd. 4. Annual legislative proposal**

The commissioners of Commerce and the Pollution Control Agency shall annually by January 15 provide to the chairs of the legislative committees with primary policy jurisdiction over energy and environmental issues proposed legislation the commissioners determine appropriate to achieve the reductions. The legislation must be based on the principles in subdivision 5. If the commissioners determine no legislation is appropriate, they shall report that determination to the chairs along with an explanation of the determination.

### **Minn. Stat. 216H.07, Subd. 5. Reduction principles**

Legislation proposed under subdivision 4 must be based on the following principles:

- (1) the greenhouse gas emissions-reduction goals specified in section 216H.02, subdivision 1, must be attained;
- (2) the reductions must be attained on a schedule that keeps pace with the reduction timetable required by section 216H.02, subdivision 1;
- (3) conservation, including ceasing some activities, doing some activities less, and doing some activities more energy efficiently, is the first choice for reduction;
- (4) public education is a key component;
- (5) all levels of government should lead by example;
- (6) strategies that may lead to economic dislocation should be phased in and should be coupled with strategies that address the dislocation; and
- (7) there must be coordination with other federal and regional greenhouse gas emissions-reduction requirements so that the state benefits and is not penalized from its reduction activities.

**B. COST OF PREPARING REPORT.** This report cost \$2,550 in staff time and printing expenses to complete.