Second Annual Legislative Proposal Report on Greenhouse Gas Emission Reductions

Minn. Stat. 216H.07, subd. 4

SUBMITTED BY

MINNESOTA DEPARTMENT OF COMMERCE

AND

MINNESOTA POLLUTION CONTROL AGENCY

JANUARY 2010

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I. STATUTORY BACKGROUND

Minn. Stat. §216H.07 was enacted by the Minnesota Legislature during the 2008 session. It addresses attainment of the greenhouse gas reduction timetable in Minn. Stat. §216H.02 and outlines a process for reporting progress in reducing greenhouse gas (GHG) emissions and for recommending policies to achieve the statutory emissions reduction timetable. This is the second annual report by the commissioners of the Department of Commerce (Commerce) and the Minnesota Pollution Control Agency (MPCA) to the chairs of the legislative committees with primary policy jurisdiction over energy and environmental issues. It is submitted to fulfill reporting requirements under Minn. Stat. §216H.07, subd. 4. The report outlines the legislative proposals determined necessary to achieve the reductions timetable in Minn. Stat. §216H.02

> **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.
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> **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.

II. OVERVIEW

In addition to presenting new recommendations for legislative initiatives in 2010 to reduce greenhouse gas emissions, this report provides an update on the status of the legislative initiatives that were proposed in the 2009 report; a summary of the state's major accomplishments in renewable energy, energy conservation and efficiency, transportation and land use, and agriculture, forestry and waste; and an update on greenhouse gas emissions.

Minnesota continues to reduce greenhouse gas emissions in many areas, but the challenge to maintain our progress each year requires long-term commitment across all sectors of the state.

III. GREENHOUSE GAS EMISSIONS UPDATE

Minn. Stat. §216H.07, subd. 3, requires a report on GHG emission reduction progress on odd numbered years. The first and most recent report was provided in January 2009. The next required report is due January 15, 2011. However, the OES and MPCA wanted to provide the Legislature with a brief summary of what is known about emissions since the January 2009 report. The U.S. Department of Energy (DOE), Energy Information Agency (EIA) recently released its national emissions estimates for 2008.[1] The EIA data shows that since 2006 (the last year of emissions reported for Minnesota in the 2009 Legislative report) national emissions of GHGs initially increased (in 2007) and then decreased (in 2008). National GHG emissions are now estimated to be lower than in 2005, the Minnesota base year for reductions. This estimate is based on projected EIA 2008 emissions. The decrease is most likely attributable to the spike in petroleum prices that occurred in 2008 and the severe downturn in the economy.

IV. GREENHOUSE GAS SECTOR UPDATE

A. ENERGY SUPPLY SECTOR

1. Prairie Island Nuclear Facility Expansion

Nuclear power is and will continue to be an important part of the fuel mix for electric generation in Minnesota. The operating license for Prairie Island facilities, one of the two nuclear power plants located in Minnesota, is scheduled to expire in 2013/2014. However, Xcel Energy filed for re-licensing Prairie Island in April 2008, and a Nuclear Regulatory Commission decision on the request is scheduled for October 2010. Additionally, Xcel Energy has filed two Certificate of Need petitions with the Minnesota Public Utilities Commission for the Prairie Island facilities to increase (uprate) generation capacity and to expand the on-site storage of spent fuel at the facility.

Regarding the uprate, Xcel Energy requested a certificate of need for a 164 megawatt (MW) increase (82 MW per unit) in the generating capability of the Prairie Island Nuclear Generating Plant. The increase is proposed to occur in two steps: during the 2012 refueling outage and during the 2015 refueling outage. The uprate is proposed to provide additional, carbon free energy to Xcel's system and represents a hedge against future exposure to fossil-fuel prices and environmental regulation.

With respect to spent fuel storage, Xcel Energy requested a Certificate of Need for up to an additional 35 spent fuel storage casks necessary to continue operating the Prairie Island Nuclear Generating Plant for an additional 20 years. The additional casks would be placed on two

[1] US Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2008* (Washington, D.C.: US Department of Energy, DOE/EIA 0573 (2008)).

concrete pads to be added inside the existing storage facility, known as the International Spent Fuel Storage Installation (ISFSI). The cask loading plans do not call for the utilization of these new storage pads until 2022. As with the requested uprate, the additional spent fuel storage is proposed to allow the Prairie Island power plant to provide additional, carbon free energy to Xcel's system and provide a hedge against future exposure to fossil-fuel prices and environmental regulation.

Both of the Prairie Island Certificate of Need requests came before the Minnesota Public Utilities Commission and were approved in November 2009. The requests will be subject to legislative review during the 2010 Legislative Session, if the Legislature decides to hear the requests.

To continue operation of Prairie Island in the future, Xcel will need both re-licensing approval from the NRC and approval for additional on-site storage from the Minnesota Public Utilities Commission. If Prairie Island is allowed to continued operation of the facility and receive approval of the requested uprate, Xcel Energy will have approximately 1,250 megawatts of base load capacity available at Prairie Island. Combined with the recently approved Monticello Nuclear Generating Plant re-licensing and two-step uprate of 71 MW, Xcel Energy will have approximately 1,900 MW carbon free, baseload nuclear energy in Minnesota.

2. Solar Energy

Solar energy can be used to produce heat and electricity in Minnesota. A common misconception is that the amount of sunlight received in an area is based on temperature. In reality, Minnesota has a significant solar resource. As a recognized leader in renewable energy development, Minnesota continues to grow its solar resource for the benefit of Minnesota's economy, environment, and energy security. To this end, OES administers several solar initiatives, including a solar rebate program (for both solar electric and solar thermal) and a new solar air heat grant program for low income households. OES maintains several partnerships with other private and nonprofit organizations which come together to further the use of solar power in Minnesota.

One current example of working in partnership to spur the deployment of solar technologies in Minnesota is the Solar America Cities program. The cities of Saint Paul and Minneapolis were selected as Solar America Cities by the U.S. Department of Energy and were jointly awarded a $200,000 grant along with $250,000 in technical assistance to develop a strategic plan to make solar energy more accessible for homes and businesses by the year 2015. OES is a partner to the effort and assisted the cities in obtaining the grant.[2] The project furthers the federal

[2] Partners include:

- Cities of Minneapolis and Saint Paul (Project Leads);
- Center for Energy and Environment;
- Century College;
- District Energy St. Paul;
- Fresh Energy;
- Green Institute;
- International Brotherhood of Electrical Workers;
- League of Minnesota Cities;
- Minnesota Department of Commerce's Office of Energy Security;

government's Solar America Initiative (SAI), which aims to make electricity from solar photovoltaic's cost-competitive with conventional electricity by 2015. Combined with industry cost share and funding from each city, total investment in the 12 participating cities is estimated at $12.1 million.

The "Solar in the Cities" initiative takes a comprehensive approach to expanding solar energy by marshalling a wide array of expertise through strategic partnerships to:

- Implement commercial and residential solar installations;
- Promote technical training programs; and
- Conduct city and state policy review.

The initiative aims to build a solar infrastructure leading to a quintupling of solar capacity in 2010 by:

- Installing a 500+ kilowatt (kW) photovoltaic (PV) system and 20 additional solar energy systems using an innovative leasing model.
- Increasing the number of qualified solar installers by supporting education and training.
- Promoting market expansion of solar technologies through:
  - Deployment of solar systems in visible locations within the cities;
  - Market identification; and
  - Technical outreach.

The Solar America Cities partnership expanded to include two district energy utilities, District Energy St. Paul and NRG Energy Center Minneapolis. Backed in part by a $1 million grant from the U.S. DOE, District Energy St. Paul has committed an additional $1 million to integrate large scale solar thermal into its district energy system to demonstrate how solar energy can supplement existing district energy systems nationwide from both a technological and business model perspective. NRG Energy will assess the feasibility of including solar thermal within its district energy system in Minneapolis as well as part of the grant.

Another recent example of partnerships furthering the use of solar energy is the 400 kW Saint John's Solar Farm. This installation is to be constructed on-site at Saint John's Abbey and University in Collegeville, Minnesota, and is scheduled for completion in December 2009. With a capacity of 400kW, Saint John's PV array will be four times larger than the current largest PV system in Minnesota, a 100kW array in Vadnais Heights. The solar farm will consist of 1,820 solar modules mounted on a horizontal-axis tracking system. The modules sit on beams that rotate east to west on a horizontal axis throughout the day, following the path of the sun across the sky. The tracking system is expected to produce approximately 15 percent more energy than a typical static array. The system will produce 575,000 kilowatt-hours (kWh) annually

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- Minnesota Renewable Energy Society;
- Neighborhood Energy Connection; and
- Xcel Energy.

(anticipated), offsetting about 20 percent of Saint John's peak energy needs during the summer months and approximately 4 percent of its overall energy needs on an annual basis, or enough energy to power 65 homes.

Approximately $2 million dollars of construction costs will be provided, in part, by customers of Xcel Energy through a grant from the Renewable Development Fund (RDF) Board. This project was chosen for funding because it would deliver 400 kW of solar electrical generating capacity to the Minnesota Xcel Energy service area, provide the opportunity to scientifically test and demonstrate the feasibility of large-scale solar in Minnesota, and test and demonstrate the technology-to-market transition. The project will:

- Familiarize Minnesotans with Minnesota's climate as a good solar resource, increasing demand for solar systems;
- Provide a large-scale demonstration site (3.1 acre solar field) of solar power in Minnesota;
- Demonstrate the financial feasibility of large-scale solar PV installations;
- Utilize the solar resources in Minnesota to generate energy during peak demand hours;
- Assist Xcel Energy in cost effectively increasing the percentage of renewables in its generation portfolio and reducing costs related to purchasing peak-period energy; and
- Track and report on the operating performance of the system – availability, kWh production, seasonal implications, and other metrics – to begin building a foundation of knowledge regarding large-scale solar in the state.

Xcel Energy will also promote the installation of solar photovoltaic in its service territory through the Solar*Rewards program, offered through the company's 2010-2012 Conservation Improvement Program (CIP).[3] Xcel Energy will provide financial incentives for customer-sited solar energy generating systems in exchange for the sale of Renewable Energy Credits (RECs) to Xcel Energy. Xcel Energy estimates saving 2,791,427 kWh and 1,062 kW of energy each year for a total of 8,374,281 kWh and 3,186 kW over the three year period through the Solar*Rewards program.

The above example demonstrates that solar energy is being deployed in Minnesota. The growth of solar resource continues to provide not only economic and energy security benefit, but environment benefits by expanding the state's carbon-free energy resources.

3. Wind Energy

Wind energy technologies that generate electricity have become the most visible form of renewable energy in Minnesota. Minnesota has a significant wind resource, especially in the area commonly known as Buffalo Ridge in the very southwestern part of Minnesota. In the southeastern part of the state, in Mower County, the combination of a good wind resource and access to the existing transmission grid has led to a rapidly increasing level of wind development activity.

[3] Documents pertaining to Xcel Energy's 2010-2012 CIP Plan are contained in Docket No. 09-198.

Minnesota has long been a national leader in promoting locally owned wind development. In 2005, the Minnesota Legislature directed utilities to create a tariff to pay for the initial construction costs for Community-Based Energy Development (C-BED) projects. In November of 2005, Governor Pawlenty established a C-BED goal of an additional 800 megawatts (MW) of locally owned wind projects by 2010. As the table below shows, C-BED financed projects have made a significant contribution to the total installed capacity from all community developed wind projects in the state between 2007 and 2008.

C-BED Projects

	December 31 2007	December 31, 2008
MN total Installed Wind	1,298 MW	1,754 MW
Installed C-BED	2.5 MW	119.5 MW
Total MN Community Wind	324 MW	450 MW

Thus, as a result of the hard work of community leaders, project developers, and utilities, over a quarter of new wind capacity installed in 2008 was community owned.[4]

As of June 2009, Minnesota had existing wind power capacity of 1,804.91 MW and has approximately 60.4 MW of wind capacity projects under construction. According to the American Wind Energy Association (AWEA), Minnesota's existing wind capacity ranks fourth in the United States, and Minnesota's potential wind capacity of 75,000 MW ranks ninth in the United States.[5]

Due to the intermittency of the wind resource, wind energy, by itself, cannot be relied upon for baseload or peaking purposes because it cannot be "dispatched" (turned on or off as needed). However, this drawback can be mitigated by being matched with another type of generation resource that has the ability to "follow" the wind energy (turned on or up when the wind is not blowing, turned off or down when wind energy is being generated). As discussed below, natural gas appears to be the default resource fuel to generate electricity when wind generated electric is not available, although other generation sources, such as hydropower, are being appraised.

4. Renewable Energy Standard (RES)

In its January 2009 report to the Minnesota Legislature, titled "Progress on Compliance by Electric Utilities with the Minnesota Renewable Objective (REO) and the Renewable Energy Standard,"[6] OES found that while there are certainly obstacles that utilities must face in meeting their REO and RES goals and requirements, the utilities appear to be making a good faith effort to comply with their 2007 obligations of obtaining at least 1 percent of Minnesota retail sales from renewable sources. Specifically, OES stated that for 2007, a total of 3,121,257 megawatt

[4] Information regarding C_BED installation is updated quarterly on the OES website at: http://www.state.mn.us/mn/externalDocs/Commerce/CBED_Projects_Report_121107120316_UtilityC-BEDProjects.pdf

[5] http://www.awea.org/projects/Projects.aspx?s=Minnesota

[6] http://www.state.mn.us/mn/externalDocs/Commerce/Compliance_with_Renewable_Energy_Objectives_011509024141_Renewable_Energy_Objective_Compliance.pdf

hours (MWh), or 4.7 percent of Minnesota retail sales, were generated from sources which are eligible to count toward the Minnesota RES. Wind accounted for approximately 46.6 percent of all renewable generation, with 24 percent generated from biomass and 29.4 percent generated from hydro.

In the report, OES also noted at that time that utilities also appear to be on track to meet their 2010 goals of obtaining at least 7 percent of their Minnesota retail sales from renewables, and in the case of Xcel Energy, obtaining 15 percent of their Minnesota retail sales from renewable sources. In total, utilities reported plans to add an estimated 2,100 MW of renewable generation through 2010, of which approximately 1,900 MW is expected to be wind energy. The planned capacity additions would generate an estimated 6,700 GWh of additional Minnesota RES eligible renewable generation. When combined with existing renewable generation, the Minnesota RES eligible renewable generation would total an estimated 9,800 GWh, representing 15 percent of total 2007 Minnesota retails sales. Given existing renewable generation plus the planned renewable capacity additions, along with the ability to use current excess Renewable Energy Credits (RECs) for future compliance, the utilities appear well positioned to meet their 2010 RES standards.

On November 2, 2009, the Minnesota Transmission Owners—those utilities that own or operate high voltage transmission lines in the state of Minnesota—issued their joint "2009 Biennial Report"[7] pursuant to Minnesota Statutes § 216B.2425. Chapter 8 of the report, beginning on page 311, provides an analysis of the utilities' progress toward compliance with state RES and the transmission needs that might be required to assure compliance with upcoming RES milestones. Noting that all utilities subject to the Minnesota RES participated in providing information for this part of the report, the report states that utilities have made substantial progress with respect to meeting future RES milestones and that in general, the utilities are in compliance with present standards and expect to have enough generation and transmission to meet RES milestones through 2016. However, utilities indicate that without the addition of the CapX 2020 Group 1 projects, the transmission system in the 2016 timeframe will not be adequate to meet the combined 2016 Minnesota RES and non-Minnesota RES milestones. The utilities also recognize that additional transmission and generation will be necessary for 2020 and beyond in Minnesota, and that other demands for renewable energy will impact Minnesota's compliance status.

5 Natural Gas Potential to Back up Wind

Natural gas generation facilities have long been a small part of Minnesota's supply mix and have traditionally relied on the summer surplus of natural gas pipeline capacity that is available, since most consumer furnaces are not being used to heat homes and businesses. However, the state's reliance on natural gas-fueled generation is increasing. These upward trends are a result of natural gas' superiority to coal and nuclear fuel in overall environmental impacts, and the fact that natural gas plants can be constructed more quickly. Natural gas-fired generation allows facilities to start up and shut down more quickly and easily than other types of facilities. However, as the demand for electricity increases or as replacement generation is needed for

[7] https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId={00D61C53-85D2-4052-93E4-95D03AFE5532}&documentTitle=200911-43520-01

retiring coal plants, only a limited number of natural gas generation facilities can be added to the existing natural gas pipeline infrastructure without appropriate pipeline upgrades to handle the additional capacity and line pressure needs of gas-fueled electric generation.

In Minnesota, no base load plants (facilities that constantly run to serve the steady level of ongoing electric demand) have been built since the 1980s, but there have been a number of capacity additions since 2000. Only six combustion generation projects greater than 50 megawatt facilities (excluding wind) have been installed since 2000, and all of the new combustion generation resource additions in Minnesota are turbines that are fueled by natural gas.[8]

While the overall domestic demand for natural gas continues to grow (especially for electric generation), the domestic supply also has the potential to grow. There is a need to further develop unconventional supplies in the lower 48 states. While the pipeline infrastructure is aging in general, Minnesota has been the recent recipient of significant investment by Northern Natural Gas (NNG) to improve and expand interstate pipeline capacity to meet contractual obligated capacity. However, new pipeline capacity will be needed for any additional natural gas capacity for yet-to-be-determined natural gas generation facilities. Moreover, as long as the balance between demand and supplies remains tight, the price for natural gas will continue to be volatile. Dependence of natural gas to fuel electric generation as a relatively cleaner alternative to other traditional fossil fuels such as coal or fuel oil has the potential to insert more volatility into electricity prices.

B. ENERGY DEMAND SECTOR

1. Conservation Improvement Program Update

The Minnesota Conservation Improvement Program (CIP) 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 incentives and services 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. OES provides regulatory oversight over use of CIP funds and strives to ensure that the electricity and natural gas savings reported through CIP are accurate and that programs are operated cost-effectively through the CIP planning and review process. OES employs a variety of methods and tools to review the plans and has authority to modify program goals or savings assumptions.

[8] See pages 9 and 10 of the 2008 Quadrennial Report at http://www.state.mn.us/mn/externalDocs/Commerce/Quadrennial_Report__2008_091509012935_2008-QuadReport.pdf

Conservation is a critical part of Minnesota's efforts to meet its residents' energy needs and reduce greenhouse gases. In its "2006 – 2007 Minnesota Conservation Improvement Program Energy and CO_2 Savings Report,"[9], OES 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_2 Savings (tons)	Gas Savings (MCF)	CO_2 Savings (tons)
2006	411,998,552	360,499	2,095,047	126,750
2007	463,542,698	405,600	1,917,144	115,987
Total	875,541,250	766,099	4,012,191	242,737

As shown in the table above, through CIP activities, Minnesota's utilities achieved a total annual energy savings of almost 464,000 MWh of electricity and 1.9 million MCF of natural gas, resulting in approximately 535,000 tons of avoided carbon dioxide emissions. In 2007, approximately $108 million was committed by Minnesota utilities to CIP activities. 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.[10]

The savings levels reported above for 2006 and 2007 represent utility activities prior to the passage of the Next Generation Energy Act (NGEA) of 2007 (Laws of 2007, Chapter 136), which established an annual savings goal of 1.5 percent of retail sales for electric and natural gas utilities. Previously the law required that each natural gas and electric utility spend between 0.5 percent and 2.0 percent of its gross operating revenues (GOR) annually on their CIP. 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. 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_2 emissions.

Meeting the 1.5 percent energy conservation goal of the NGEA will require a tremendous increase in program activity. 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_2 savings associated with this level of energy savings would potentially increase by the same factors. 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, OES, and energy consumers.

[9] See the full report on the OES website at: http://www.state.mn.us/mn/externalDocs/Commerce/MN_CIP_Energy_and_CO_2_Savings_Report_012109122950_CIP_CO_2Report.pdf

[10] The 2005 Legislative Auditors Report on the Energy Conservation Improvement Program may be viewed at: http://www.auditor.leg.state.mn.us/Ped/2005/pe0504.htm.

2. ARRA Stimulus Update

Stimulus-funded Energy Programs in Minnesota - Overview

On February 17, 2009, President Obama signed into law the American Recovery and Reinvestment Act (ARRA). In May 2009, the Minnesota Legislature passed, and Governor Pawlenty signed, Chapter 138-S.F. 657, legislation that designates Minnesota's share of the ARRA dollars into various programs. OES and several other agencies are managing stimulus-funded programs with energy and environmental benefits. Federal stimulus allocations for energy and environment related programs in Minnesota are as follows:

Table 2

Program Category	Amount (millions)
Weatherization Assistance Program	$131.9
State Energy Program	$54.2
Energy Efficiency and Conservation Block Grant Competitive Grants	$10.64
Appliance Rebate Program	$5
Clean Diesel Grants	$1.57

The main goals of these programs are to save energy, reduce environmental pollution, and create jobs. Highlights from the ARRA-funded programs are:

- Minnesota's Weatherization Assistance Program, a program that installs energy conservation measures in low-income households, was one of the top five state programs for production using the stimulus funds during 2009. As of December 14, 2009 WAP had completed 1,344 homes using ARRA funds and had another 2,278 in progress.

- During 2009, Metro Transit incorporated 67 fuel-efficient, hybrid buses in its fleet, and Metro Mobility recently purchased 15 smaller electric/hybrid buses this fall with federal ARRA funds. The Met Council anticipates that the new Metro Mobility vehicles will achieve 25 to 30 percent better fuel economy than similar gas-operated buses. In addition, all new diesel buses being purchased use "clean diesel" technology, which results in lower emissions of non-GHG air pollutants.

- MnDOT continued to increase its use of alternative fuels by purchasing light duty E85 vehicles and heavy duty trucks equipped with diesel oxidation catalysts. MnDOT is using ARRA funds to retrofit 90 diesel engines throughout its fleet.

- MPCA received $1.57 million in ARRA funding for clean diesel grants; 125 applications were received this June with 62 grants awarded. These ARRA grants are reaching mom-and-pop truckers as well as corporate fleets all across Minnesota. Most grants are for auxiliary power units (APUs), which are popular because they save the truck operator money during overnight stops by turning off the main engine while the truck is heated or cooled by the generator.

Weatherization Assistance Program (Ch. 138, Article 2, Section 1)

Minnesota's Weatherization Assistance Program (WAP) provides energy auditing and conservation services to over 4,000 low-income families each year. The State's energy dependency is reduced and the environment improved by reduction of carbon emissions from low-income residences. For the 2009-2010 program year, income guidelines were increased to 200 percent of the Federal Poverty Guidelines, and the average allowable cost of installed measures was raised to $6,500. Using federal stimulus funds, Minnesota's program is projected to service over 16,000 homes statewide. Energy-saving measures conducted on the qualified homes include air sealing, insulation of attics and walls, repairing and replacing heating plants, and providing set-back thermostats, energy-efficient lighting, and water saving equipment. Households are educated on energy-saving methods that they can implement themselves to further reduce energy use.

In late December, Minnesota was notified that it is one of the five top states in the nation in number of houses weatherized. As of December 14, 2009 WAP had completed 1,344 homes using ARRA funds and had another 2,278 in progress. Minnesota WAP work using ARRA funds started later than anticipated because new Davis-Bacon Act wage determinations for weatherization worker took longer than anticipated. Minnesota's wage determinations for a weatherization worker became available September 3, 2009.

State Energy Program

The State Energy Program (SEP) allows states to design and implement energy efficiency and renewable energy programs. Select SEP programs for Minnesota are highlighted below.

- Local Government and School District Renovations (Ch 138, Art 2, sec 7)

  OES will use between $4 and $6 million for a Facility Cost-share Program to award competitive grants to school districts and local governments to make cost-effective energy improvements to existing facilities. Emphasis will be placed on projects that have a pay-back of between two and ten years that are ready for immediate implementation. Grant funds will provide up to 25 percent of the cost of the improvements up to a maximum of $100,000. The RFP for the Facility Cost-share Program is expected to be issued in January 2010; proposals will be due six weeks after the RFP is issued. OES also expects to use a portion of the funds appropriated under this section to co-fund improvements undertaken by the Public Buildings Enhanced Energy Efficiency Program (PBEEP).

- Residential Energy Efficiency Rebates (Ch, 138, Article 2, Section 2)

  Energy Saver Rebates was launched in December 2009. Rebates are available on a first-come first-served basis to eligible homeowners who install eligible energy saving home improvements financed by a Fix-up Fund loan. The maximum rebate amount is $10,000. The program is being administered by the Minnesota Housing Finance Agency.

Project ReEnergize was initiated in October 2009. Rebates are available to homeowners who install eligible energy efficiency improvements. The total amount available for rebates is $2.5 million. The program is being administered by the Builders Association of Minnesota (BAM) on behalf of OES.

The newest round of solar rebate programs is planned for January 2010. The source of funds is $3 million from ARRA and therefore the programs are subject to federal rules. The programs include residential and small business applications for the following:

- Minnesota Solar Electric Rebate Program
- Minnesota Solar Hot Water Rebate Program
- Minnesota Solar Air Heat Rebate Program

New program applications and guidelines will be posted on the OES website in January 2010.

- Emerging Renewable Energy Industries Grant Program (Ch. 138, Article 3, Section 6)

  The Emerging Renewable Energy Industries Grant Program focuses on establishing Minnesota as a manufacturing center for renewable energy, energy storage, and geothermal systems and parts. OES anticipates that between two to six projects will be selected for $2 million in funding that is available to industrial manufacturers that are or will engage in the manufacturing of renewable energy components, equipment and systems that contribute to the energy efficiency and/or the renewable energy portfolio of the State.

Energy Efficiency and Conservation Block Grant Competitive Grants (Ch 138, Art. 2 Section 6)

The Energy Efficiency and Conservation Block Grant (EECBG) is a competitive grant to enhance energy efficiency, create and retain jobs, and reduce emissions of greenhouse gases. The grants will be awarded to the most competitive cities, counties and townships that were not one of the 23 cities and 10 counties that received direct EECBG funding from the U.S. DOE. Eligible activities are divided into two application categories: direct energy saving projects and indirect energy saving programs. Up to $6.3 million is available and will be awarded on a competitive basis with consideration of geographic location and population size. The maximum award under this solicitation is $100,000 for projects and $50,000 for programs. The RFP for this program was released on December 14, 2009; proposals are due January 25, 2010.

State Energy Efficient Appliance Rebate Program (Ch. 138, Article 6, Section 3)

ARRA provides $296 million nationwide to implement Section 124 of the Energy Policy Act of 2005, establishing DOE support to states for rebates for residential ENERGY STAR® appliance products. The state is eligible to receive approximately $5 million in formula-based funding to establish or supplement established ENERGY STAR appliance rebate programs. A

comprehensive application was submitted to DOE on October 15, 2009 and approved in December. Minnesota's program is expected to begin in March 2010. The program will provide 25,000+ rebates on:

- refrigerators ($200)
- clothes washers ($200)
- dishwashers ($150)
- freezers ($100)

Consumer demand is expected to exceed rebate supply for this program, so OES is currently working with retailers and appliance manufacturers to offer additional promotions during the time the rebates are effective.

More information may be found at the following web sites:

- Minnesota Session Law Chapter 138 provides details on stimulus-funded energy programs.
- Updates on stimulus-funded energy programs are available by email through the OES stimulus e-mail list.
- Check the Latest News section for past editions of OES stimulus updates.
- View the OES September 2009 Progress Report on ARRA Energy-Related Funds.
- The next OES progress report will be available on January 15, 2010 at www.energy.mn.gov

3. Buildings, Benchmarking and Beyond Technology Improvements

In December 2009, the Minnesota State Administration and Commerce Departments completed a major revision of Buildings, Benchmarks and Beyond (B3) benchmarking system. The B3 Benchmarking system was developed in 2003 to help public building managers better manage their existing buildings by providing them comparative information on their facility's energy consumption. The system compares the energy consumption of a building to that of other similar buildings and to its own energy consumption data from previous years. The system identifies whether a building is consuming more or less energy than expected for its type of building and whether it is consuming more or less energy than it did in a previous year. The 2009 updates to the B3 Benchmarking system provide major functionality for building energy management and change-tracking. New features include:

- Rich Internet Application (RIA) technology, delivered in the browser.
- Consumption graphs and tables at the site level, or rolled up to the organization level.
- Weather normalized baseline calculations.
- Portfolio listing of how each building's current consumption compares to a baseline year.
- Carbon dioxide reporting at the organization and building level for each fuel source using Climate Registry protocols.
- Self-guided assistance in identifying data problems.

These new measurement and trending tools are essential components of any energy savings plan and will enable B3 Benchmarking to continue its role in helping building managers reduce state-wide energy consumption through improved building management on an on-going basis. Visit www.mnbenchmarking.com for a complete tutorial on the new features.

C. AGRICULTURE, FORESTRY AND WASTE SECTORS

1. Biofuels and Low Carbon Fuels

E15 Update. On March 6, 2009, Growth Energy requested a waiver from U.S. EPA under section 211(f)(4) of the Clean Air Act for ethanol blends up to 15 percent volume (E15). Currently, the limit on ethanol blends is 10 percent. EPA must either grant or deny the request by December 1, 2009 (within 270 days of application receipt). Growth Energy claimed in the request that the E10 "blend barrier" is an artificial ceiling on the market and unless removed, will result in an insufficient supply of ethanol to meet the 2007 Energy Independence and Security Act (EISA).

To receive EPA approval, Growth Energy's waiver application must demonstrate that E20 will not cause significant problems in the following areas:

- Fuel system materials compatibility;
- Vehicle drivability/engine operation characteristics;
- Exhaust and evaporative emissions;
- Fuel and emissions systems and engine durability; and,
- Health effects.

The waiver application cites multiple studies, including five Minnesota studies, in support of the position that E15 will cause no drivability issues, will not damage engines or increase tailpipe emissions above CAA standards (similar to gasoline). The current proposal submitted by Growth Energy and 54 ethanol producers to EPA recommends immediate introduction of E15, the introduction of E20 by 2015, and the introduction of E30 by 2019 if necessary to comply with the RFS.

In EPA's Notice of Receipt published April 21, 2009, EPA invited public comments on the following:

1. Appropriate level of scientific and technical information to ensure E15 will not cause or contribute to a failure of emissions control devices over the useful life of both road and non-road vehicles;
2. If the use of E15 were restricted to a subset of vehicles or engines (herein "partial waiver"), the class of measures that would need to be taken to ensure the fuel is only used on those specific vehicles;
3. Legal and technical needs for a partial waiver; and
4. Education efforts to inform the public of the new fuel, especially if only a partial waiver is granted.

On September 14, 2009, a bill was introduced in the U.S. Senate that would allow introduction of mid-level ethanol blends into commerce only after review by EPA's Science Advisory Board. The bill includes the CAA 211(f)(4) requirements, as well as the requirement to offer consumers gasoline other than the mid-level blends and another public comment period after the CAA waiver requirements and Advisory Board decision. The bill was referred to the Committee on Environment and Public Works, where it is currently being reviewed. (S. 1666)

On December 1, 2009, EPA sent a letter to Growth Energy describing the status of EPA's review of its waiver request for E15. Although all the studies are not yet complete, EPA has found that newer vehicles have the engine and emission control systems that can accommodate higher ethanol blends, but they are still evaluating component durability when E15 is used over extended driving. The U.S. DOE is currently conducting this study and expects results by May and a completed study by August 2010. By mid-June 2010, EPA expects to be able to make a decision on E15 for 2001 and newer vehicles. EPA is also taking steps to address fuel pump labeling issues to ensure customers utilize the proper gasoline for the vehicles and equipment should a higher ethanol blend be approved.

Low Carbon Fuel Standard Study by University of Minnesota. The purpose of a Low Carbon Fuel Standard (LCFS) is to reduce carbon intensity in transportation fuels as compared to conventional petroleum fuels, such as gasoline and diesel, thereby decreasing greenhouse gas (GHG) emissions. The GHG emissions from a particular fuel are calculated across the fuel's life cycle, sometimes referred to as "well to wheels" analysis. Under a LCFS, fuel that is sold within specified jurisdictions, like a state, can have associated life cycle GHG emissions no higher than is specified in the LCFS.

A recent study was sponsored by OES because of a requirement from the Legislative Energy Commission for a low-carbon fuel standard study and recommendations. The study was conducted by the University of Minnesota Departments of Applied Economics, Bioproducts and Biosystems Engineering and Mechanical Engineering, and the Center for Transportation Studies. The purpose of this study was to develop a set of Minnesota-specific analytical tools that can be used to estimate the economic and environmental impacts of implementing a LCFS in Minnesota and to use those tools to conduct environmental and economic analyses to better understand the impacts of different transportation fuels and fuel-related policies.

A Technical Assumptions Review Committee (TARC) was formed to review and assess the inputs to the analysis performed during the project. This will assure that transparent and commonly accepted practices and protocols are in place, that assumptions are well vetted and referenced, and that a balanced comparison has occurred. The report is currently in review by TARC and other state agencies.

E85 and Minnesota's Clean Cities Program Update. Minnesota Clean Cities program, coordinated by Minnesota's Clean Air Choice team, is one of the most successful programs promoting use of E85 in the nation. It is responsible for the growth in number of E85 fueling stations and use of E85 as a fuel in the state. In the early part of the decade, Minnesota had 17 E85 fueling sites and only a few thousand flex fuel vehicles (FFV). Today, Minnesota is home to more than 250,000 FFVs and 351 E85 retailers. Over the decade, E85 is estimated to have reduced emissions of GHG by 430,000 tons. But the level of emissions reduction attributed to

use of E85 may not continue. During 2009, use of E85 declined due to the comparatively low price of gasoline, and, although end-of-year sales numbers are not yet available, the decline is estimated to be in the range of about 30 percent.

The Clean Air Choice team typically promotes E85 by exhibiting at events, exhibits, expos, fairs and conventions. In 2009, the team began a series of new promotional efforts, including ones targeting social media (Facebook and Twitter) and formation of new partnerships such as those established with the Minnesota Vikings and LiveGreenTwinCities.com. Through a multi-state program, Clean Cities' outreach efforts resulted in 55,632,677 earned media impressions during the year. Other facets of the program also provided some impressive end-of-year numbers for the program:

- The American Lung Association of Minnesota continues to administer the state's E85 blender and biodiesel infrastructure grant program. E85 sites opened in Ada, Alexandria, Belle Plaine, Canby, Chanhassen, Fisher, Goodhue, Morton, North Mankato, Prior Lake, Red Wing, Shakopee, Slayton, Warroad and Woodbury, bringing the state total to 351 sites, 51 of which now have blender pumps. Ten additional sites are expected to open in the coming months.

- Fleets, decision-makers and the general public learned about *Clean Air Choices* at 90 exhibits, presentations, fuel promotions and workshops.

- Direct mail postcards were mailed to 17,758 flex fuel and diesel vehicle owners.

- On May 1, Minnesota officially moved to a 5 percent blend of biodiesel in nearly all diesel fuel. A media event was held in Eagan to celebrate the milestone.

- During session, state lawmakers approved additional funding for retailers to install ethanol blender dispensers. We are also the recipient of a U.S. Department of Energy award to increase our E85 fueling infrastructure and conduct grand opening promotional activities for these new sites.

Members of the Minnesota Clean Air Choice Team 2000 – 2010 include: Minnesota Corn Growers Association • Minnesota Soybean Growers Association • Minnesota Office of Energy Security • Minnesota Department of Agriculture • Ford Motor Company • General Motors Corporation • National Ethanol Vehicle Coalition • Minnesota Coalition for Ethanol • Minnesota Office of Environmental Assistance • AgStar Financial Services • U.S. Department of Energy • American Lung Association of Minnesota.

2. Biomass and Terrestrial Carbon Sequestration

Plants, trees and other types of growing biomass have the potential to remove CO_2 from the atmosphere by photosynthesis. Uptake and storage of carbon in plants and soils can be enhanced through changes in land management practices, thereby offsetting GHG emissions within the state. To identify opportunities within the state that could best accelerate uptake and storage of carbon in plants and soil, the Pawlenty Administration has formed an interagency working

group, the Interagency Terrestrial Carbon Sequestration Team (ITCS), that is being coordinated by DNR and includes the Minnesota Departments of Transportation, Agriculture, Commerce, MPCA, and the Board of Soil and Water. The working group and member agencies will continue to invest in land management practices and programs that contribute to carbon sequestration, including the following:

- Investments in forest health and productivity – including enhanced silviculture and slowing and mitigating the impacts of forest pests, particularly the Emerald Ash Borer.
- Investments in programs that contribute to the avoided loss of carbon due to forest fragmentation and conversion to other land uses.
- Other investments in the health, protection and restoration of native plant communities.

Over the next year, ITCS will develop and recommend a policy frame work for carbon sequestration. The ITCS Team and member agencies will also continue to refine and enhance the ability to manage carbon through:

- Pilot projects to test and demonstrate practices and accounting protocols.
- Contributions to development of carbon protocols.
- Evaluation and pursuit of methods to monitor landscape change and estimate changes in carbon stocks.

3. Integrated Waste Management and Renewable Energy at State-Owned Landfills

GHG Reduction Stakeholder Recommendations. The Minnesota Pollution Control Agency (MPCA) has contracted with the Minnesota Environmental Initiative (MEI) to design, lead and facilitate a stakeholder process to develop strategies to achieve GHG reduction, energy conservation, and environmental protection through changes in integrated solid waste management practices. The Integrated Solid Waste Management Stakeholder Process involves a 17-member group that has focused on the four major population centers that encompass 17 counties and one sanitary district where approximately 70 percent of the solid waste in the state is generated. The charge to the Work Group is to develop elements of a plan to achieve the GHG emission reduction goal of 52.5 $MMTCO_2e$ in the solid waste sector within the four population centers.

Beginning in late 2008 and continuing through 2009, the Work Group met a total of 16 times. The Work Group developed 25 unanimously supported strategies to reduce GHG emissions within the solid waste sector and an additional 13 strategies that were supported by a majority of members, for a total of 38 recommended strategies. The majority of the recommended strategies are source reduction and recycling strategies (26), while the rest involve organics management, waste-to-energy (WTE), landfill disposal or other supporting strategies. The stakeholder group completed its review of public comments, and its final report is now available at MEI's web site: http://www.mn-ei.org/projects/solidwaste.html.

Renewable Energy at State-Owned Landfills. The MPCA unsuccessfully applied for funding from the Legislative-Citizen Commission on Minnesota Resources to perform renewable energy assessments at closed landfills, including solar, wind, biomass and biogas. To continue progress, MPCA has funded a smaller wind assessment at 13 landfills that will be completed by January 2010 and is evaluating proposals from solar developers to establish a 2-5 megawatt pilot solar array on the landfill footprint for one facility (Olmsted), with potential construction in summer 2010. MPCA is also evaluating the costs and benefits of creating carbon credits for landfill gas-to-energy efforts.

D. TRANSPORTATION AND LAND USE SECTORS

1. Transportation Update

Metropolitan Council. During the past year, the Metropolitan Council (Council) has worked on several transportation initiatives that will reduce GHG emissions. These initiatives fall into two broad categories: (1) those that encourage less single-occupant vehicle driving in the region, and (2) activities that reduce GHG emissions of transit operations.

These major initiatives in 2009 include:

- Preparation of the Transportation Land Use Planning Resources Report, which is due to the Minnesota Legislature in January 2011. This report will examine local and regional transportation and land use strategies and processes that will reduce air pollution, mitigate traffic congestion, and reduce costs for operating, improving, and maintaining infrastructure.

- The North Star commuter rail line, which opened in November 2009 and offers a lower emission alternative for commuters coming into Minneapolis from Big Lake and other communities in the T.H. 10 corridor.

- Continued progress on engineering of the Central Corridor, the second LRT in the Twin Cities.

- Completion of the Urban Partnership Agreement (UPA) transit and highway improvements. This will accelerate the completion of the I-35W and Cedar Bus Rapid Transit lines to provide better transit alternatives from the south suburbs, and will also provide new park-and-ride spaces for transit users along I-35W north of Minneapolis. In addition, provision of a second bus lane along 2nd Avenue and Marquette Street in downtown Minneapolis will significantly improve travel time through downtown for express buses from all parts of the region.

- Continued reduction in emissions from bus operations. Metro Transit now has 67 hybrid buses in its fleet, and Metro Mobility recently purchased 15 smaller electric/hybrid buses this fall with federal ARRA funds. The Met Council anticipates that the new Metro Mobility vehicles will achieve 25 to 30 percent better fuel

economy than similar gas-operated buses. In addition, all new diesel buses being purchased use "clean diesel" technology, which results in lower emissions.

Department of Transportation. MnDOT continues to increase its use of alternative fuels by purchasing light duty E85 vehicles and heavy duty trucks equipped with diesel oxidation catalysts. MnDOT retrofitted 110 on-road diesel vehicles as part of a CMAQ (Congestion Mitigation Air Quality) funded project, and is using ARRA funds to retrofit 90 diesel engines throughout its fleet. The agency has applied federal funding through the Urban Partnership Agreement to relieve congestion on I-35W through construction of a dynamic priced shoulder lane and other measures.

The agency is participating with other state agencies in Minnesota's recently formed Climate Change Adaptation Group and is working with the Federal Highway Administration to better understand the potential for managing its roadsides for carbon sequestration. Finally, MnDOT continues to promote public transit, particularly in greater Minnesota, through the Public Transit Participation grant program, and improve bicycling and walking alternatives near schools through the federal Safe Routes to Schools Program.

2. California Clean Car Standards – Completed

The USEPA and US Department of Transportation published a Notice of Proposed Rule Making in the Federal Register on Sept. 28, 2009, proposing GHG emission standards for light-duty vehicles and revised Corporate Average Fuel Economy (CAFE) Standards. These proposed standards apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles for model years 2012-2016. The proposal also includes provisions for flexibility and credits for flexible fuel vehicles and air conditioner improvements. The final rule is expected to be published in March 2010.

The proposed rule includes tiers of emission and mileage levels based on the type and size of vehicle, with the standards becoming more stringent year by year. The USEPA expects the combined emission standards for cars and trucks to be 0.65 lbs GHG/mile (295 grams/mile) in 2012. The allowable level will decline to 0.55 lbs/mile (250 grams/mile) in 2016. Currently in Minnesota the average light duty vehicle emits about l pound of GHG per mile driven. The proposed federal emission standard is intended to match the levels that California proposed in its state rule.

The National Highway Traffic Safety Administration's (NHTSA) proposed CAFE standard for the combined fleet is 29.8 miles per gallon (mpg) for 2012, increasing to 34.1 mpg in 2016. These fuel economy standards will apply to all vehicles sold in the United States and allow automobile manufacturers to sell a single fleet nationally.

3. Electric Vehicle Infrastructure – Legislation Signed

In 2009, Minnesota codified and amended state law to enable development of recharging stations for plug-in hybrid and electric vehicles within the state. One statute, 325F.185, sets standards for electric vehicle infrastructure within the state by requiring that electric vehicle

infrastructure be in compliance with standards set by the Society of Automotive Engineers, be able to recharge any make, model and type of electric vehicle, and be capable of providing bidirectional charging. In Minnesota Laws 2009, Chapter 134 the Legislature amended an existing statute to allow all electric vehicles to be considered as eligible technology under state goals and programs to reduce petroleum-based fuels. The change explicitly excludes electric vehicle recharging stations from the definition of a public utility, which exempts these stations from a number of regulations that apply to energy suppliers in the state. The state also requires that mandated Sustainable Building 2030 performance standards address energy use by electric vehicle charging infrastructure in or adjacent to buildings as that infrastructure begins to be made widely available. These legislative changes lay the ground work for broad adoption of plug-in electric vehicles in the state.

4. Clean Diesel in Minnesota

State Update

State of Minnesota Clean Diesel Grant. $1.2 million for each year of FY '08 and '09 was provided to MEI to coordinate the retrofit of approximately 600 school buses per year. MEI is close to achieving retrofits on about 2,000 Minnesota school buses since 2005, which directly impacts the health of about 150,000 students. Most of the funding received in FY '08 has been committed to projects. MEI has received an additional $1.2 million to complete new retrofit projects by June 30, 2011. Typically, buses are retrofitted with a closed crankcase filter and a diesel oxidation catalyst (DOC) at a cost of around $2,000-$2,500 / bus. Particulate emissions are reduced about 20 to 25 percent with this setup.

Federal Update

Regular Diesel Emission Reduction Act (DERA) Grant. A $488,000 grant spread over two years ending June 30, 2010 will provide additional diesel emission reductions. $244,000 goes through MEI and $244,000 goes through MPCA's Small Business loan program. Auxiliary Power Units (APUs) are a popular small business loan request because they save the truck operator money during overnight stops. The main engine is turned off and a 10 to 12 HP generator engine heats or cools the truck.

CMAQ—Congestion Mitigation and Air Quality Grant. To implement the retrofit of metro area public on-road heavy-duty diesel vehicles (primarily snow plow dump trucks), a $500,000 grant originated from the Federal Highway Administration was awarded to MPCA, which provided a 20 percent match for a total of $625,000 through the state transportation management organization (TMO), the Metropolitan Council. MnDOT provides fiscal administration and oversight of the grant.

The grant is being used to retrofit MnDOT snow plow trucks and the same type of trucks in six metro area counties with DOCs to reduce particulate matter, carbon monoxide and hydrocarbon emissions. Other types of vehicles that have been retrofitted include garbage trucks, street sweepers and book mobile trucks. A total of more than 217 heavy duty diesel vehicles have been

retrofitted so far, well beyond the original grant proposal goal of 200 trucks. Upon completion of this project by the end of 2010, it is anticipated that all remaining eligible MnDOT, Metro County, Minneapolis and St. Paul vehicles will have been retrofitted through this grant project. In 2010, the new focus of the grant work will be on retrofitting Minneapolis and St. Paul fire trucks.

Stimulus funds through American Recovery and Reinvestment Act (ARRA) DERA. MPCA received $1.57 million for clean diesel grants. MPCA held a lottery for each pre-determined category to select projects that would receive awards among the 125 applications. The process resulted in 62 grant awards. The grants funded a wide range of trucking operations, from mom-and-pop truckers to corporate fleets. Most grants are for APUs and California Air Resources Board-approved refrigerator trailer generators, both of which are needed to do business in California.

Minnesota Environmental Initiative (MEI) has been awarded a $3,000,000 grant by USEPA to reduce emissions from diesel vehicles in the state through Project Green Fleet (PGF). The funds will be used to retrofit school buses and heavy-duty diesel vehicles with pollution control equipment, as well as provide for engine repowers, vehicle replacements and a range of idle reduction technologies. Today, the PGF partnership includes 45 participants, drawing members from the trucking and construction sectors, numerous school districts and school bus transportation companies, a rail road, three tribes and eight units of government.

5. Central Corridor Electrification Grant

Bringing a plug-in electric vehicle infrastructure to reality is the goal of a collaborative effort of government, community, environmental and business leaders in the state. The objective is to install dozens of on-street and parking ramp plug-in stations in the Twin Cities, at visible locations, to create a means for plug-in hybrid electric and full electric vehicles (EVs) to be recharged. Electric drive vehicles are anticipated to be available to consumers and fleets in late 2010.

Project partners include Ford Motor Company, Xcel Energy, City of St. Paul, City of Minneapolis, Fresh Energy, HourCar (car sharing program), Hennepin and Ramsey Counties, American Lung Association of Minnesota and state agencies (MPCA, MN Department of Administration, DNR). Earlier this year, a U.S. DOE transportation electrification grant was awarded to Ford Motor Company, which is the anticipated supplier of electric drive vehicles for the project.

Nearly half of all the air pollution in the state comes from vehicles. Migration to EVs offers the promise of improved air quality from reduced vehicle emissions. Combustion of each gallon of gas emits 20 pounds of carbon dioxide, a primary greenhouse gas. Other benefits of electric drive vehicles include:

Economic

- Fuel cost savings: EVs run on less than $1 per gallon (gas equivalent).
- Job creation for repair and maintenance of EVs.

Energy Independence

- Reliance on domestic energy sources – EVs do not rely on foreign imports.
- Enhanced ability to integrate renewable energy into the grid by controlling vehicle charging to the lowest demand periods.

Public Health & Environment

- Zero emissions at the tailpipe.
- Enhanced ability to integrate renewable energy into the grid by controlling vehicle charging to the lowest demand periods.
- Zero greenhouse gas and hazardous air emissions both in energy production and at the point of use when renewable electricity is used to charge EV batteries.

E. CROSS-CUTTING ISSUES

1. Midwest Governors' Association

Six Midwestern governors signed the Midwestern Greenhouse Gas Reduction Accord in November 2007. To implement the Accord, a diverse stakeholder group was appointed to discuss and recommend a unique, Midwestern-based approach for reducing GHG in the region. The stakeholder group has developed draft recommendations that have been subsequently adapted into a draft model rule that could be used to implement the recommended regional program. In addition, the design of several complementary measures is proceeding in a parallel manner. These include policies and activities to promote energy efficiency improvements; investments in renewable energy and biofuels; and progress in development and deployment of advanced coal and carbon capture technologies. Final economic impact modeling on the draft recommendations will be completed in January followed by completion of a final draft model rule.

2. Climate Adaptation Workshop

In July 2009, the State formed an interdepartmental team to coordinate climate adaptation in Minnesota. Adaptation approaches are the strategic adjustment of the best management practices to maximize ecosystem resilience to climate change. The team is coordinated by the MPCA and consists of representatives from the following state departments: Office of Energy Security, Department of Natural Resources, Health Department, Department of Agriculture, MnDOT, and Office of Emergency Management. The team is identifying Minnesota-specific concerns associated with a changing climate and developing a framework for future climate adaptation efforts. The team expects to have an initial framework report completed in early 2010.

3. GHG Inventory System

To implement the Greenhouse Gas (GHG) inventory required under Minn. Stat. 216H.021, the MPCA plans to request 2010 GHG emissions from Title V permit holders in Minnesota who are not required to report GHG emissions to the EPA. The MPCA also plans to seek 2010 GHG emissions from stationary sources that have a state air quality permit and GHG emissions above 25,000 tons per year. Future work to implement strategy will involve evaluating the need for a GHG emission threshold below 25,000 tons per year, identifying and providing guidance to stationary sources that do not already have an air quality permit that exceeds the threshold, reviewing data needs to calculate GHG emissions for transportation fuels and natural gas combustion, and identifying any necessary rulemaking efforts.

The MPCA will provide notice and general guidance to affected facilities in Minnesota covered by the federal GHG Mandatory Reporting Rule. The USEPA will collect 2010 GHG emissions data and require facilities to report directly to the USEPA. The MPCA also continues to review the methodologies and reporting system to ensure that Minnesota has access to the data collected by the USEPA and to harmonize the state system with the federal system.

The Legislature also provided the MPCA with funding to support the development of a data management system for all emissions data, including GHG emissions data. As of November 2009, the MPCA has defined the system requirements and is preparing a work order to submit to the Office of Enterprise Technology's Master Contract List to perform the necessary information technology work.

4. Green Enterprise Law

Minn. Statute 116J.438, passed in the 2009 session, directs Department of Employment and Economic Development (DEED), in consultation with the Department of Commerce, to lead a multi-agency effort to advise, promote, market, and coordinate agency efforts on green economy business development projects. This effort includes using state resources to expedite grants, licenses, permits and other state approvals needed for a project to move forward. Other agencies named are Natural Resources, Agriculture, Pollution Control, and Transportation. There is also an expectation that the chairs and ranking minority members of the key legislative committees, private business representatives, and other stakeholders will be involved. Remaining funds from the Green Jobs Task Force ($107,000) have been transferred to DEED and will be used for marketing expenses related to promotion of green and clean technology investments and job creation in the state.

DEED has appointed a green enterprise assistance coordinator, Jennifer Hawkins, who formerly worked in economic development for Minnesota Power. She will be coordinating these projects and ensuring broad support for business development. DEED's website will include a section on information and links to many green and renewable resources.

DEED and other partners sponsored the Green Jobs booth at the Minnesota State Fair and will make presentations to stakeholder groups and others to promote the Green Enterprise assistance, including the Economic Development Association of Minnesota's January conference. DEED is

still coordinating the Wind Advisory Group and is planning for the American Wind Energy Association WINDPOWER conference in April 2010 in Dallas.

5. Government Leads by Example

State agencies are working together and with local entities to develop and implement effective carbon reduction programs by sharing ideas, resources and expertise on GHG reduction strategies. This coordinated interagency effort has produced a number of initiatives that have achieved results on a state agency level and are beginning to achieve similar outcomes in participating Minnesota communities. The following section highlights some of the state and local government led initiatives that are having broad impact and can serve as models for other Minnesota communities and citizens.

a. State Government

A New Executive Order strengthening state agency environmental, energy and transportation sustainability is under review by the Governor's Office. The new order streamlines and consolidates existing executive orders and legislative requirements for state agencies relating to the environment, and requires state agencies to create sustainability plans to address targets set in four functional areas: buildings/energy, fleet management, environmentally preferable procurement, and waste management/pollution prevention. Progress in reaching the targets will be measured and reported. Information on these efforts can be found at http://www.pca.state.mn.us/sustainability/actionplan.html.

Sustainable Buildings. The state has developed three complementary programs to increase energy efficiency, reduce GHG emissions and operating costs, improve occupant health and minimize environmental impacts in buildings: the Minnesota Sustainable Building Guidelines (MSBG); Buildings, Benchmarks and Beyond (B3); and Sustainable Building 2030. These programs provide the tools needed to identify the poorly performing buildings that can best benefit from efficiency projects, while assuring that new construction projects and major renovations using state bonding authority are developed to standards that exceed Minnesota's current building code. The effect of these programs is not only being realized within new and renovated state buildings but also on the local level. For example, the B3 program benchmarks the energy performance of local government and school buildings as well as state buildings so local building operators can obtain accurate energy performance data and determine cost-effective improvements to implement. Also, new public buildings around the state are being constructed to meet the high performance and environmental standards of MSGB (meeting minimum MSGB standards equates to a silver LEED rating) and these standards will help keep operating cost lower over the life of the building. In addition, the construction techniques needed to meet these standards are being incorporated into the state's architectural education programs and into industry training programs. These construction guidelines and techniques are being promoted to Minnesota's utility programs to be implemented in non-government buildings as well.

In the spring of 2008, the Minnesota Legislature passed legislation establishing building performance standards called Sustainable Building 2030. This legislation reflects the goal of the national Architecture 2030 program. Every five years, the total energy use in buildings is to be reduced starting in 2010 by 60% and ending in 2030 as a 100% reduction (net zero carbon). During 2009, the Minnesota Sustainable Building 2030 team assessed the feasibility and cost-effectiveness of the targets and determined that they not only could be achieved, but that meeting these goals was cost-effective for most types of buildings. The team then developed an implementation plan that includes incorporating the 2030 standards into MSBG as well as developing case studies as models and conducting outreach and education efforts. This phase of the work will be complete in 2010.

A major component of Minnesota Sustainable Building 2030 is education and training. University of Minnesota School of Architecture is playing a lead role and has adopted a new Master of Science degree program related to sustainable design with advanced courses in energy, water, and materials. The regular Master of Architecture degree also includes courses in carbon-neutral zero energy design. Two sustainable design classes are required for all first-year graduate students. Approximately 45 to 60 students take these courses every year. The University's Center for Sustainable Building Research (CSBR) is also developing continuing education courses that directly deliver information to the design and construction industry related to attaining the statutorily required (MN Statute 216B.241) cost-effective energy-efficiency performance standards developed for the Minnesota Sustainable Building 2030 program. CSBR also provides information on architectural issues of sustainability for courses that may be offered by the U.S. Green Building Council, American Institute of Architects, the American Society of Heating, Refrigerating and Air-Conditioning Engineers and other groups.

In January 2009, MSBG was expanded to include major renovations receiving funding from state bond proceeds. The extension of MSBG to major building renovations will assure that their energy performance exceeds that of the current state building code by 30 percent. MSGB version 2.1 was also released and includes new guidelines pertaining to performance management, site and water, energy and atmosphere, indoor environmental quality, materials and waste.

In 2009, Minnesota's B3 energy performance benchmarking tool, the system that collects information on the energy performance of existing public buildings, continued to collect public building energy data and now includes data on 5,100 public buildings. This tool helps building managers understand the energy performance of their building in order to make wise investment decisions. It also helps administrators direct energy conservation improvements towards the poorly performing buildings where improvements are most needed and will be most cost-beneficial. During 2009, B3 also underwent a major update to provide new functionality for building energy management and provide better information.

In 2009, the City of St Paul unanimously approved the adoption of a Green Building policy that was developed with grant funds provided by MPCA. This action extends MSBG to all city building projects that receive $200,000 or more in city loans, grants or "other funding vehicles" and requires that they meet green-building standards that are based either on MSBG or defined by a rating system such as LEED. The policy will apply to projects for which schematic design

begins after July 1, 2010. The policy is designed to meet the Sustainable Building 2030 energy benchmarks, which is likely to result in significantly reduced energy costs and GHG emissions.

Renewable Fuels Coupled with Cost-Effective Wastewater Treatment. In 2009, a pilot research project developed by Metropolitan Council and a team of researchers at the University of Minnesota began operation. This project grows algae using centrate, a liquid waste separated from the wastewater biosolids, at a wastewater treatment plant in St. Paul. The research is examining the feasibility of using algae to remove nitrogen and phosphorus from this waste stream—which may be part of the solution for reducing the overall discharge of nutrients in effluent released from the plant into the Mississippi River—as well as creating a biofuel that does not compete with food production. This project is also identifying species of algae that grow in cold climates and is working on improvements in growing processes.

State Grant Programs that Reduce GHG Emissions or Sequester Carbon. Many state departments, as well as other government agencies including the Legislative-Citizen Commission on Minnesota Resources (LCCMR), the University of Minnesota, the State University and College System, and the Iron Range Resource Board, have programs that conduct research or provide technical assistance and/or grants for projects that reduce GHG emissions or expand terrestrial resources that sequester carbon. Although many of the state programs are directed at achieving other primary benefits, GHG reductions are acknowledged as important co-benefits and are increasingly becoming a key element in decisions on project selection. The array of programs within the state that have a GHG impact include deep university level research aimed at discovering breakthrough technologies; performance and demonstration projects to commercialize renewable energy or efficiency technologies; and land use research to identify and verify the type of land management practices that are compatible with Minnesota landscapes and can sequester greater amounts of carbon. Many state grant programs, such as ones that promote green building construction practices, reduce energy use, develop renewable energy or expand wildlife habitat, also reduce GHG emissions

Many of DNR's land management programs provide examples of terrestrial carbon sequestration programs. These include such program as Shoreline Restoration, Minnesota ReLeaf, Forestry Cost-share and Landowner's Incentives, which are directed at increasing wildlife habitat, forests or other biomass plantings that have the direct benefit of sequestering carbon while furthering other important environmental goals. Many MPCA outreach programs, such as their Environmental Assistance grants and loans, are targeted at pollution prevention but also reduce GHG emissions. Other agencies such as OES, Minnesota Housing Finance Agency, MDA, and MnDOT target shovel-ready projects such as construction of sustainable buildings or development of renewable energy projects. Together these programs cover the gamut of the types of projects needed for true market transformation to a low carbon economy.

b. Local Government Actions

Energy Efficient Cities. The Center for Energy and Environment received a grant from the LCCMR for an Energy Efficiency Cities project that will demonstrate innovative residential energy efficiency program delivery, with associated job training and financing components, to significantly reduce energy use and environmental impact in at least 6,000 homes through a community-wide partnership approach.

This project is intended to demonstrate and jump start innovative efficiency programs throughout Minnesota. City-specific programs will be developed in at least eight cities, including Minneapolis, St. Paul, Apple Valley, Owatonna, Austin, Rochester, Duluth and Park Rapids. Although these programs will be customized, they are expected to have some or all of the following components:

- Community-based marketing strategies to recruit participants to educational events, primarily workshops, for training participants to take low-cost energy actions and serve as an entry into the program;
- Energy consumption feedback program to encourage individual energy-saving actions, with interactive media and website resources to support these actions
- Analysis of electric and natural gas consumption data to identify and focus on high-energy usage homes;
- Installation of low-cost energy efficiency materials;
- In-home visits to verify and complete installation of low-cost materials, identify other energy-saving opportunities, and provide a customized energy action plan;
- Assistance, including providing cost-share, for completion of major efficiency upgrades including insulation, air sealing and major mechanicals replacement;
- Training for insulation and air sealing contractors.

Combined, these program components are expected to provide a comprehensive and integrated "one-stop shot" approach to make taking energy efficiency actions as easy as possible for the homeowner. Lessons learned from this project would be leveraged by including successful elements of these strategies in large scale utility energy efficiency programs..

Sustainable Schools. Schools for Energy Efficiency® (SEE) is a comprehensive program to help K-12 schools save energy and money by changing behavior throughout the district. SEE provides a systemized plan, awareness materials, training, and utility tracking for immediate and sustainable savings. An OES grant provided key support for this project initially, and it now continues to expand independent of state government funding. In less than five years the SEE program has expanded into 400 schools. Of the schools reporting current results, the average energy savings is 10-20 percent and in total they have avoided over $10 million in energy costs in only four years. More than 100 SEE school facilities have qualified for U.S. Environmental Protection Agency ENERGY STAR® Labels, ranking these facilities in the top 25 percent in the nation for efficient operations. In addition 13 SEE school districts, out of only 32 in the nation, have received ENERGY STAR Leader awards for continuous improvement in energy efficiency. The environmental impact of these energy savings is a reduction in greenhouse gas emissions by 845 million pounds of CO_2 (the same amount of carbon dioxide as 82,968 passenger cars emit in

a year, or 49,206 households using electricity emit in a year**,** or 319,428 acres of pine forest store in one year). SEE received a Minnesota Governor's Award for Pollution Prevention in 2008.

Minnesota Schools Cutting Carbon is a three-year initiative supported by a grant from the Legislative Citizen Commission on Minnesota Resources to assist 100 Minnesota public high schools, colleges, and universities in becoming more energy efficient and reducing their greenhouse gas emissions. This project is a partnership involving OES, MPCA, Clean Energy Resource Teams (CERTs), U.S. Green Building Council, Will Steger Foundation, Environmental Resources Management, Inc., Project Green Fleet, and several student organizations. A unique aspect of this project is the emphasis on student leadership in developing and taking action at their schools. Each school formed a team (students, faculty, building operator & administration) that is working to implement an action plan to save energy and reduce carbon emissions. The supporting partners are providing technical and financial assistance, focused particularly on low and no cost options that involve student action

Engaging Local Communities and Citizens. Two new assistance programs--Minnesota GreenStep Cities and Minnesota GreenCorps--are helping cities, counties, schools, and other public entities ramp up their sustainability actions with a focus on cutting energy use and greenhouse gas emissions. The MPCA and OES presented a report to the 2009 Legislature recommending the creation of the GreenStep Cities program. The agencies are preparing to launch the program at the League of Minnesota Cities' June 2010 annual conference. Greenstep Cities is a voluntary program for all Minnesota Cities to identify, support, and recognize implementation of a set of sustainable development best practices. Resources include model sustainable development ordinances, environmentally preferable purchasing assistance, green building resources, renewable energy and alternative fuels assistance.

Also in 2009, the MPCA and other state agencies, with federal and private funding, deployed 20 full-time "GreenCorps" members funded through a grant from the federal Americorps program at 16 sites in Minnesota, including cities, counties, schools, and nonprofit organizations. These members are working on projects in energy conservation, waste prevention, living green outreach, local food systems, and urban forestry.

V. STATUS OF POLICY RECOMMENDATIONS FROM 2009 GHG LEGISLATIVE REPORT

This section contains an update of the current status of the policy recommendations that were contained in the 2009 GHG Report.

- **The OES should continue to aggressively pursue implementation of the Conservation Improvement Program and the Renewable Energy Standard.**
    - As discussed above in Section IV.A.2, Renewable Energy Standards, Minnesota gas and electric utilities have made substantial progress with respect to meeting future Renewable Energy Standard (RES) milestones and that in general, the utilities are in compliance with present standards and expect to have enough

generation and transmission to meet RES milestones through 2016. OES continues to monitor RES developments and concludes that utilities are generally on course to meet the RES milestones for 2010, 2012, and 2016.

- With regards to CIP efforts, Section IV.B.1, 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 520,000 tons of avoided carbon dioxide emissions in 2007. The 2007 savings levels represent utility activities prior to the passage of the NGEA, which establishes an annual savings goal of 1.5 percent of retail sales for electric and natural gas utilities. 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, OES, and energy consumers.

- **Minnesota should pursue incentives to reduce GHG emissions from transportation fuels, including implementation of E20, E85, B20 and NextGen biofuels goals.**

  - On March 6, 2009, Growth Energy requested that EPA grant a waiver under section 211(f)(4) of the Clean Air Act for ethanol blends up to 15 percent volume (E15). Currently, the limit on ethanol blends is 10 percent. Growth Energy and 54 ethanol producers propose the immediate introduction of E15, the introduction of E20 by 2015, and the introduction of E30 by 2019 if necessary to comply with the RFS. Five Minnesota studies are listed supporting the increase.

    EPA must either grant or deny the request by December 1, 2009 (within 270 days of application receipt). The original public notice period was to end May 21, 2009, but EPA extended the period until July 20, 2009. Before E15 can be implemented, the EPA must grant a waiver to the provisions of the Clean Air Act certifying E15 for general use in gasoline engines.

    On September 14, 2009, a bill was introduced in the U.S Senate that would allow introduction of mid-level ethanol blends into commerce only after review by EPA's Science Advisory Board. The bill includes the CAA 211(f)(4) requirements, as well as the requirement to offer consumers gasoline other than the mid-level blends and another public comment period after the CAA waiver requirements and Advisory Board decision. The bill was referred to the Committee on Environment and Public Works, where it is currently being reviewed. (S. 1666)

    On December 1, 2009, EPA sent a letter to Growth Energy describing the status of EPA's review of their waiver request for E15. Although all the studies are not yet complete, EPA has found that newer vehicles have the engine and emission control systems to accommodate higher ethanol blends, but they are still evaluating component durability when E15 is used over extended driving. DOE is currently conducting this study and expects results by May and a completed

study by August 2010. By mid-June 2010, EPA expects to be able to make a decision on the use of E15 for 2001 and newer vehicles. EPA is also taking steps to address fuel pump labeling issues to ensure that customers utilize the proper gasoline for the vehicles and equipment, should a higher ethanol blend be approved.

- **Minnesota should advocate for federal regulations to reduce GHG emissions from motor vehicles.**

  - EPA is developing national motor vehicle GHG emission standards equivalent to the "California Car."

- **Minnesota should investigate infrastructure needs for supporting electric vehicles.**

  - In 2009, Minnesota codified and amended state law to facilitate development of recharging stations for plug-in hybrid and electric vehicles within the state. One statute, Minn. Stat. 325F.185, sets standards for electric vehicle infrastructure within the state by requiring that such infrastructure be in compliance with standards set by the Society of Automotive Engineers, able to recharge any make, model and type of electric vehicle, and be capable of providing bidirectional charging.

- **Minnesota should continue to actively participate in the Midwestern Greenhouse Gas Reduction Accord process which is exploring the concept of an effective cap and trade program that works for the Midwest, while advocating for a national GHG reduction program.**

  - The MGA Accord Stakeholder Group has completed a list of recommendations for a Midwestern Regional Cap and Trade Program. A model state rule has been drafted based on those recommendations.

- **Minnesota should continue efforts identified by the Minnesota Terrestrial Carbon Sequestration Initiative Task Force to identify scientifically sound, efficient, and cost-effective methods to achieve GHG emission reductions through land management activities, technological advances, and other practices.**

  - State agencies have formed a Terrestrial Sequestration Team under the leadership of the Department of Natural Resources. The Legislature required a 1,000,000-acre reforestation study, due January 2010.

- **The MPCA should continue the development of a comprehensive GHG emissions and tracking inventory system that can be appropriately integrated with any future GHG mandatory reporting rules expected from U.S. EPA next year and consistent with the regional cap and trade program requirements described above.**

    - EPA finalized a GHG mandatory reporting rule in 2009. Legislation passed requiring the MPCA to develop a mandatory GHG emission reporting system for Minnesota, and work is underway.

- **Minnesota should lift the statutory ban on new nuclear energy facilities to allow for consideration of next generation nuclear technology to meet future energy needs.**

    - Legislation was introduced but failed to pass.

- **Minnesota should consider the adoption of appliance standards for certain applications where federal standards do not exist.**

    - No action was taken by the Legislature.

- **Minnesota should investigate new models for community development of renewable energy that promote local ownership and green buying opportunities.**

    - No action was taken by the Legislature.

- **Minnesota State agencies should continue and expand existing efforts to coordinate their green jobs and clean technologies promotional activities.**

    - The 2009 Minnesota Legislature enacted Minnesota Statute 116J.438,[11] entitled the "Minnesota Green Enterprise Assistance." This statute requires that "The commissioner of employment and economic development, in consultation with the commissioner of commerce, shall lead a multiagency project to advise, promote, market, and coordinate state agency collaboration on green enterprise and green economy projects, as defined in Minn. Stat. 116J.437. The multiagency project must include the commissioners of employment and economic development, natural resources, agriculture, transportation, and commerce and the Pollution Control Agency. ... The objective of the project is to utilize existing state resources to expedite the delivery of grants, licenses, permits, and other state authorizations and approvals for green economy projects.

[11] https://www.revisor.mn.gov/statutes/?id=116J.4

- **Minnesota should adopt Green Jobs Investment Initiatives including implementation of Green JOBZ, investment tax credits for green job growth and small businesses green job projects, and conservation credits for bio-methane, solar and other renewable energy projects.**

- No legislation was enacted in 2009.

- **Minnesota should coordinate climate change actions with green job initiatives to maximize job creation in Minnesota.**

- OES has funded a study to investigate and develop strategies that will lead to expansion of the state's green manufacturing sector. The final report will be complete in February 2010. This study will identify green product and services opportunities for the state, assess the state's competitive advantage for green job growth, identify effective strategic economic development partnership models, and, finally develop strategies for growing the green manufacturing within the state. This study includes a facilitated input process from a wide cross section of stakeholders, including representatives from business, finance, labor, environmental, higher education, workforce development and other vested agencies. A number of interim products, including a directory of green manufacturers within the Twin Cities, have already been produced.

- **Leading by example, Minnesota State agencies should continue efforts to develop sustainability plans incorporating existing executive orders, current statutory requirements for state agencies, and new strategies to reduce greenhouse gas emissions along with a system for reporting on accomplishments.**

- The Governor's Executive Orders requiring state departments to reduce energy use, reduce pollution, and increase use of renewable fuels have been consolidated and refocused to emphasize GHG emission reductions. State departments are working together to set and achieve goals and develop sustainability plans.

VI. NEW POLICY RECOMMENDATIONS FOR 2010 REPORT

1. **Appliance Standards.** Adopt appliance standards for high energy using appliances such as electronics and ice making machines that are not currently covered by federal standards. Minnesota could save an estimated 214 GWh of electricity and 449 Million CF of natural gas a year by adopting energy efficiency standards for 15 appliances that are not federally regulated. That savings would grow to 1,082 GWh of electricity and 3,906 Million CF of natural gas by 2020.

2. **New Building Energy Code Adoption.** Adopt new building energy code revisions, both commercial and residential, within one year after the national code has been adopted or publish an explanation of the rationale for not adopting the most recent energy code.

3. **White Tags for Energy Efficiency.** Ensure that statutory energy efficiency goals are met most cost-effectively by allowing utilities that are exceeding their statutory requirements to market "white tags" to other utilities that have not yet met their statutory requirements. The white tags concept is an offshoot of the more mature renewable energy credit or "green tag" trading. White tags are documents certifying that a certain reduction of energy consumption has been attained.

4. **Open Utility CIP Market and Provide Statewide Access to CIP Through Fuel Neutrality**. Expand the current definition of "Energy Conservation Improvement" under Minnesota Statutes §216B.241 to allow utilities to count energy conservation projects toward CIP saving goals regardless of fuel type. The new definition and eligibility should also apply to customer generated energy such as combined heat and power, solar photovoltaic, and methane digester projects that are used to offset retail purchases.

5. **CIP Up-Front Payments.** Develop a pilot "pre-bate" program in partnership with a utility and assess demand, efficacy and project cost in comparison to that of normal rebate process. A "pre-bate" is an up-front payment by a utility of CIP incentives to provide project seed financing. Pre-bates would allow utilities to provide rebates before the installation of eligible equipment for large energy users in lieu of the typical rebate provided after a project is completed. Pre-bate are a financing mechanism to speed up a large project's implementation date.

6. **Energy Efficiency Financing.** Develop rules and legislation for a voluntary energy loan tax assessment program (ELTAP). An ELTAP would allow homeowners to finance energy efficiency and renewable energy improvements to their homes, paying back the up-front capital over time as part of their property tax bill. ELTAPs provide the financial tool necessary to undertake energy retrofits of existing homes. Additionally, as the property improvement benefits will be realized by future owners, ELTAPs will transfer the financial obligation to future owners as a property changes hands.

7. **Greater Opportunity for Green Power Purchases.** Provide opportunities for large commercial and industrial customers to make green power purchases.

8. **Consistent Statutory Definition of Renewable Biomass.** Harmonize statutory definitions of renewable biomass to maximize opportunities for jobs, energy, economic development and GHG emissions reductions.

9. **Smart Grid Plans.** Require utilities to prepare a joint Smart Grid Development and Implementation Plan for PUC approval. Smart grid technologies allow for two-way information flows between suppliers and consumers, and will be capable of monitoring power plants, customer preferences and individual appliances. Smart Grid technologies enable consumer and utilities to save energy, reduce cost, increase reliability, allow for better management of renewable energy and increase transparency.

10. **Ownership of Large-Scale Ground Source Heat, Waste Heating and Renewable Energy Systems.** Align State and local rules, regulations, definitions and permitting systems to allow utility ownership of large-scale energy systems, such as ground source heat systems and solar systems that are located on premises of end users other than the utility. Include such systems under the definition of "infrastructure" projects. Utility ownership of large energy systems for the end user would eliminate the large first cost differential for the end user and open the door for cost effective widespread application.

11. **Coal-fired facility emission requirements.** Replace the statutory prohibition on new coal-fired facilities with an in-state generation emissions requirement that exceeds best available practices.

12. **Nuclear Power Ban Removal.** Lift the statutory ban on new nuclear energy facilities to allow for consideration of next generation nuclear technology to meet future energy needs.

13. **Cost recovery for GHG reduction projects.** Allow "emissions rider" cost recovery for utilities that complete plant efficiency and grid improvements not covered by Minn. Stat. 216B.1636(b)(2), and for biomass and natural gas co-firing that result in GHG emissions reductions.

ACKNOWLEDGEMENTS

The Department of Commerce Office of Energy Security and the Minnesota Pollution Control Agency thank the Department of Natural Resources, Department of Transportation, Department of Employment and Economic Development, Department of Agriculture, Metropolitan Council, and University of Minnesota for contributing to this report.