

Greenhouse Gas Reduction Efforts in Minnesota

Conference on the Environment

November 19, 2014

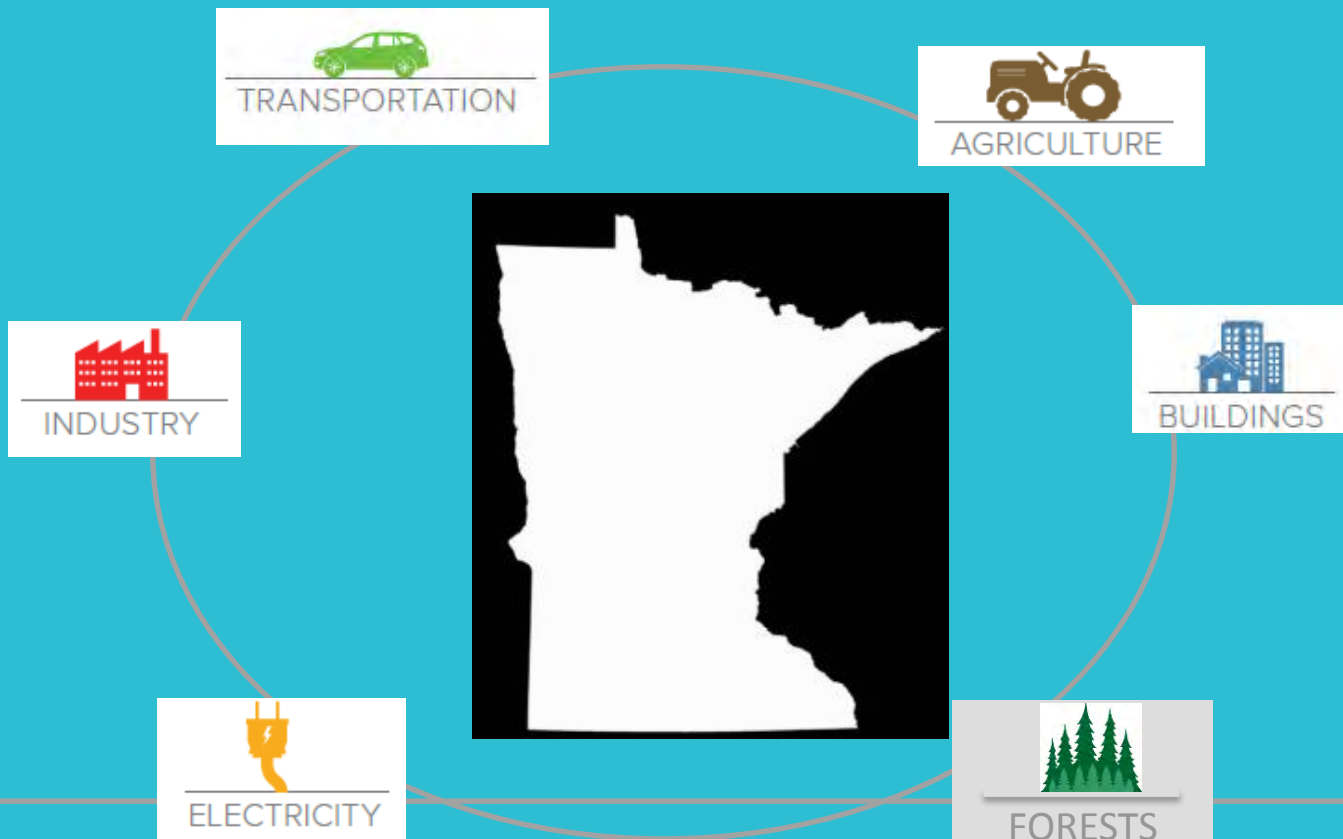
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Climate Solutions and Economic Opportunities:

An analysis of Minnesota specific strategies to reduce greenhouse gas emissions in major sectors of our economy





Minnesota Climate Change Advisory Group Final Report

A Report to the Minnesota Legislature

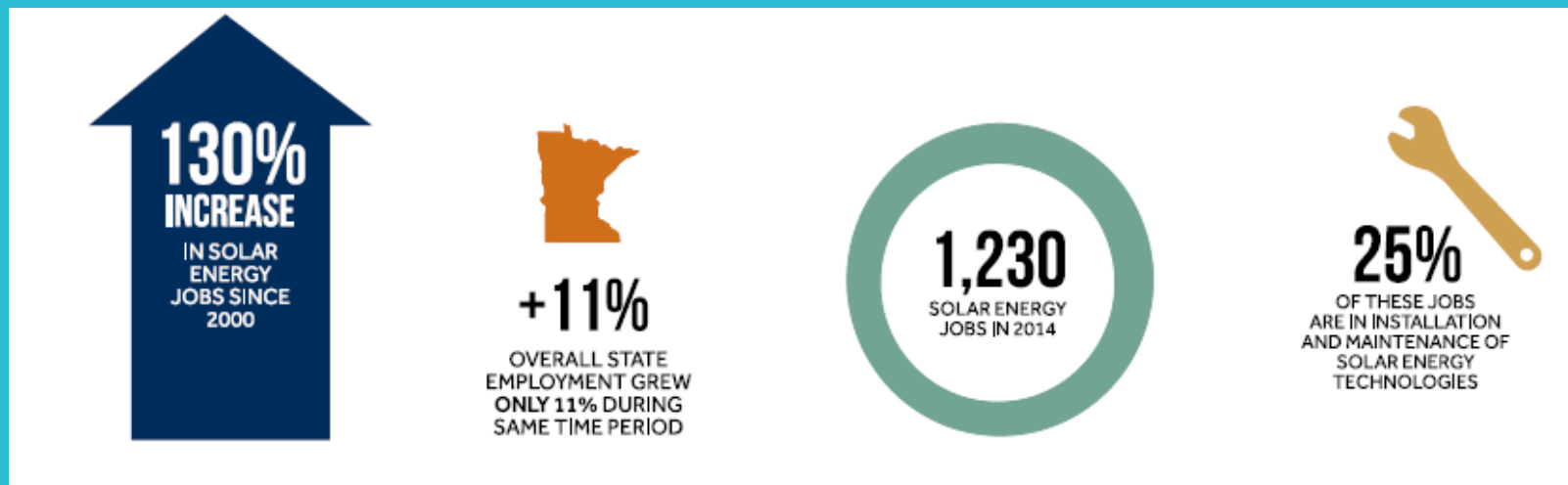
April 2008

Minnesota and Climate Change: Our Tomorrow Starts Today



Clean Energy Jobs: Solar

- Installed state solar capacity grew 86% from 2010 to 2013
- Average state wages in the solar sector were \$70,400





Next Generation Energy Act Goals

Reduce statewide greenhouse gas emissions below 2005 levels by at least:

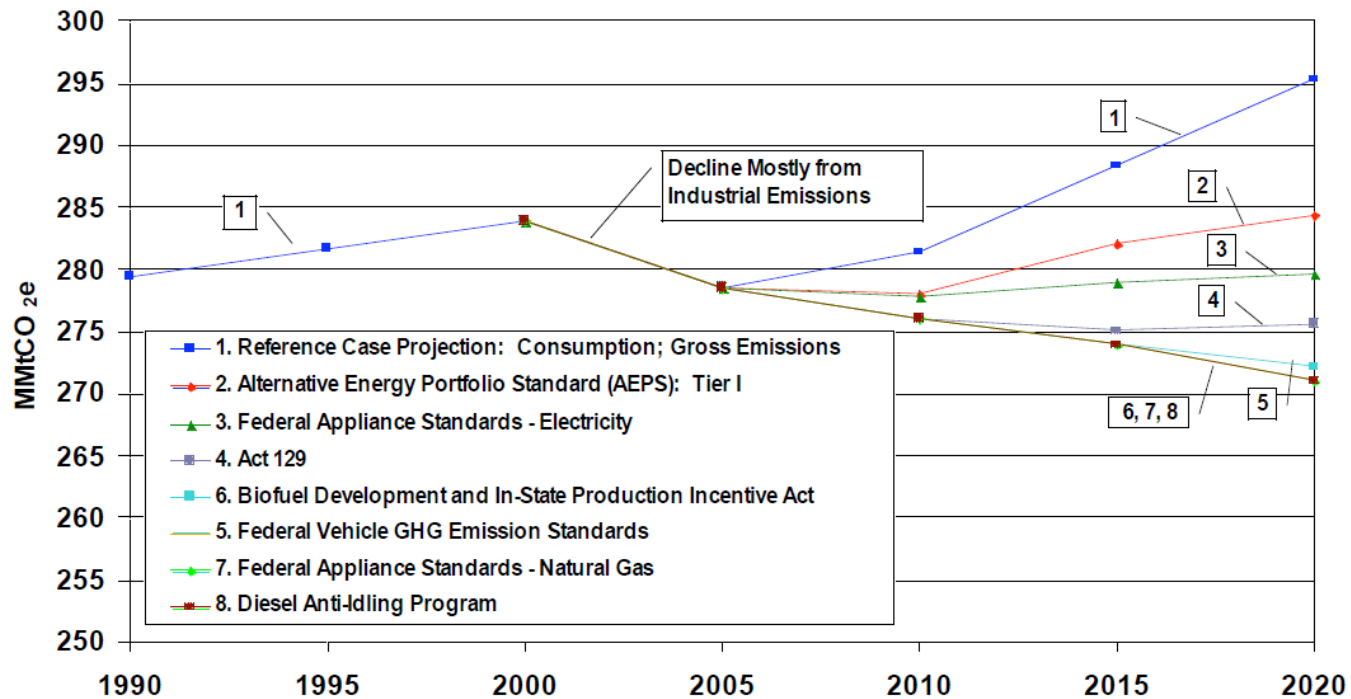
- 15 percent by 2015
- 30 percent by 2025
- 80 percent by 2050



Constructing climate wedges



Estimated Emission Reductions Associated with the Effect of Recent State and Federal Actions in Pennsylvania



MMtCO_{2e} = million metric tons of carbon dioxide equivalent.





Microeconomic Analysis

Assess the potential for each policy option to **reduce greenhouse gases** from net changes in:

1. Energy or materials consumption
2. Direct emissions

Assess societal costs and savings related to each policy option:

1. Investments, such as capital costs for infrastructure
2. Operations and maintenance costs
3. Energy and materials costs
4. Administrative costs





Macroeconomic Analysis

Assess the indirect effects from implementation of all policy options on:

1. Net jobs
2. Income
3. Economic growth
4. Productivity
5. Rates and prices

Fairness and Equity Analysis:

Assess how the impact of policy options will be distributed across Minnesota, in terms of how they relate to the size, location, or socio economic character of households, entities, and communities.





Stakeholder Involvement

- March 28th ~70 people met at a public EQB Climate Subcommittee meeting
- Comments accepted after meeting and in an ongoing open fashion
- Stakeholder meetings facilitated by Environmental Initiatives
 - November 20, 2014
 - February 27, 2014



EPA's Proposed Clean Power Plan Rule

111(d) Greenhouse Gas Emissions
Standards of Performance for Existing
Fossil Fuel Electric Generating Units



Existing Power Plants

- Clean Air Act Section 111(d)
- Applies to existing fossil fuel power plants
- Establishes emission guidelines
- States responsible for plans



Photo credit: Minnesota Power (Laskin Energy Center)



Carbon Dioxide Emissions in Minnesota

- ▣ Next Generation Energy Act
- ▣ Renewable Energy Standard
- ▣ Electric Efficiency Standard
- ▣ Emission reduction statutes

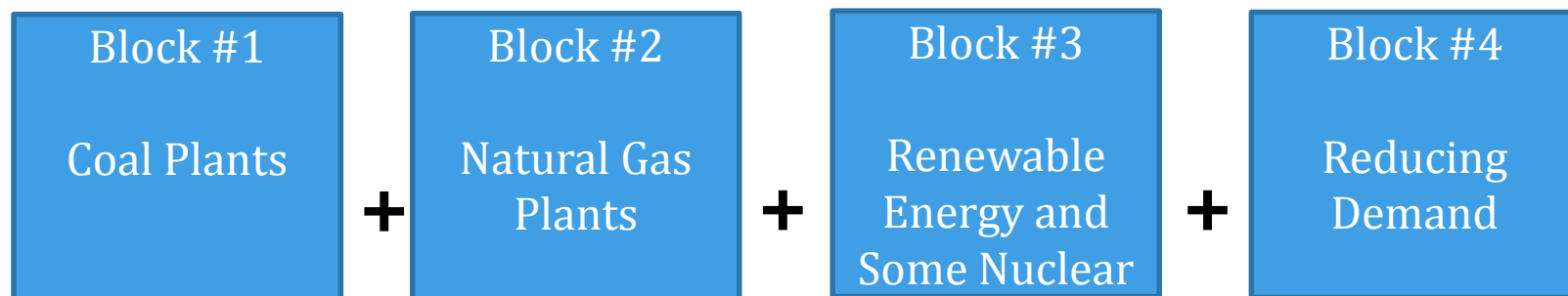


State by State Emission Limit Goals

- Baseline generation & emission year = 2012
- State emission rate goals
 - Pounds of CO₂/megawatt hour (lbs CO₂/MWh)
 - Interim goal for 2020-2029
 - Final goal for 2030 and beyond

State by State Emission Reduction Targets

- EPA calculated pathway to achieve goals
 - EPA's pathway not binding on states
 - State Plan must achieve emission rate goals
 - State Plan establishes a state's pathway
- State goals set by using 4 building blocks



Major Issues

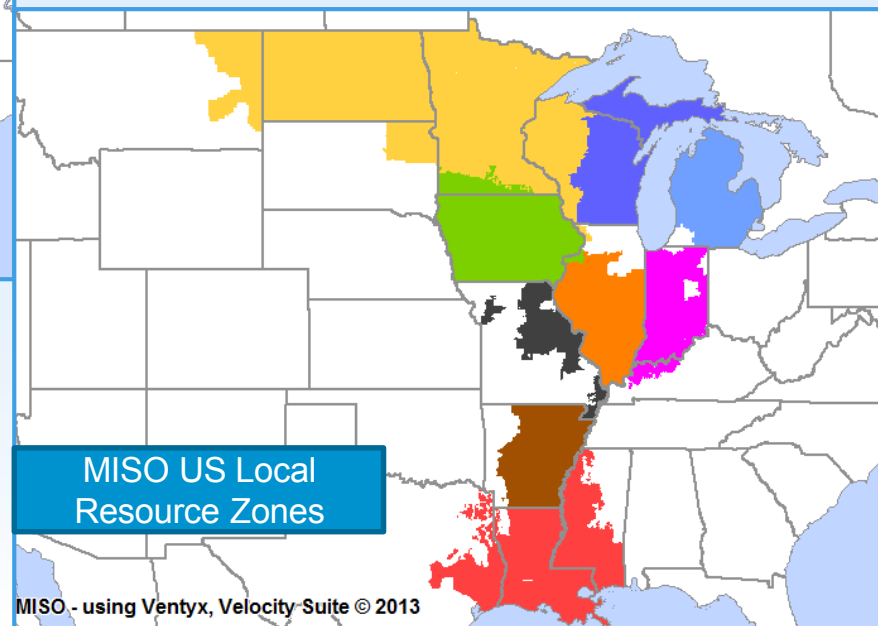
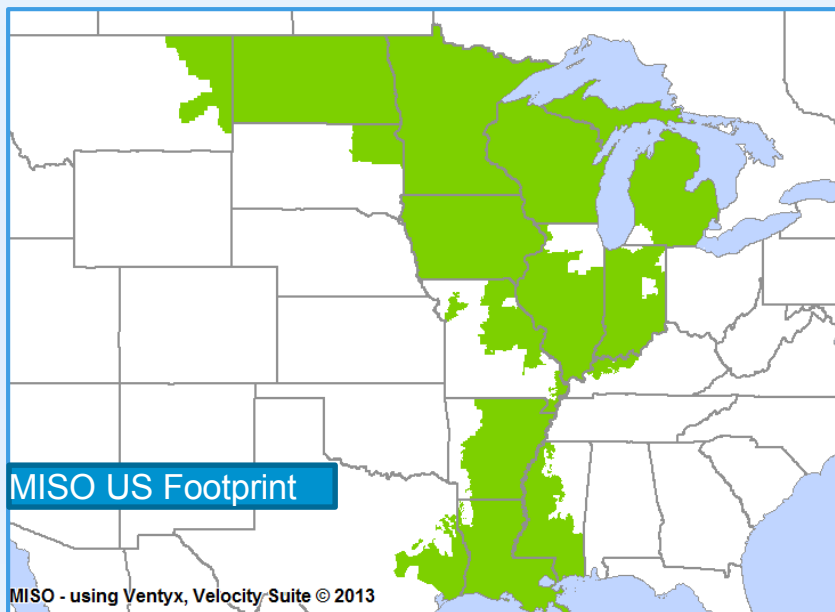
- Minnesota's targets more aggressive than neighboring states
- Treatment of "early action"
- SHERCO 3 was off-line in 2012
- Minnesota's out-of-state renewable energy
- Hydro power
- Ensure other states reduce emissions

Conclusions

- MPCA generally supports EPA's approach
- Minnesota's system recognized
- Complements existing policy



Regional Collaboration



Regional Collaboration

- Midcontinent State Environmental and Energy Regulators (MSEER)
- Midwestern Power Sector Collaborative
- Georgetown Climate Center



Related studies and efforts

- Department of Commerce studies
 - Energy Savings Goals
 - Solar Thermal
 - Renewable Energy Integration Study
 - Energy Storage Study
 - Energy Future Framework
- Public Utilities Commission
 - Externalities update for carbon emissions

Thank You

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Photo credit: NASA / Reid Wiseman



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