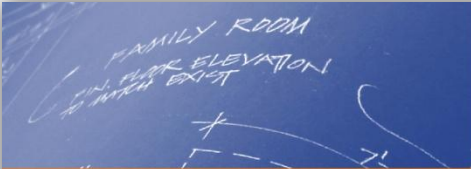




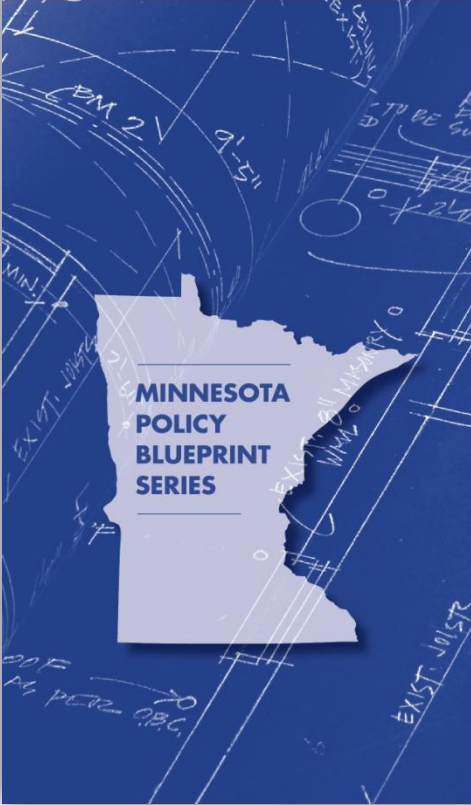
**A FRESH LOOK AT MINNESOTA'S
RENEWABLE ENERGY STANDARD
AND CONSERVATION
IMPROVEMENT PROGRAM**

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Recommendations for Promoting Affordable and Competitive Energy Rates in Minnesota



Peter J. Nelson



Outline

- ▣ Overview of Minnesota's RES and CIP
- ▣ Impact of MN's RES
- ▣ Impact of MN's CIP
- ▣ Other perspectives on costs/benefits
- ▣ The need for more meaningful and actionable cost/benefit information
- ▣ Conclusion: Why we must care about the cost impact of Minnesota's green energy policies

Overview of Minnesota's RES and CIP

MN's Renewable Energy Standard

RES Requirements

- Electric utilities must generate or purchase 25 percent of their electricity by 2025. Xcel must generate 30 percent by 2020. (Minn. Stat. 216B.1691)

MN RES		Xcel Energy's RES	
2012	12%	2010	15%
2016	17%	2012	18%
2020	20%	2016	25%
2025	25%	2020	30%

MN's Renewable Energy Standard

How MN's RES compares to other states

- ❑ 29 states plus D.C. have an RES.
- ❑ MN's RES is possibly the most stringent in the nation.
 - ❑ The required percentage is higher than nearly every state.
 - ❑ Fewer energy technologies qualify as renewable under MN's standard in comparison to some states. For instance, large hydro (WI, MI, IL), energy efficiency, geothermal, and combined heat and power do not qualify under MN's RES.
 - ❑ MN's RES applies to all utilities. Many states—e.g., IA, IL, MO, MT, OH, IA, PA and IN—exempt cooperatives and municipals.
 - ❑ MN does not have an effective cost cap to exempt utilities from compliance if the cost of the mandate runs too high.
 - CO and IL cap costs at 2 percent and 2.015 percent respectively.
 - CA and NY cap costs to the money available in their renewable energy funds.

MN's Renewable Energy Standard

Estimate of 2010 RES Compliance

Utility	2009 Minnesota Generation (MWh)	Unretired RES + 2010 YTD RECs (MWh)	REC Balance as % of 2009 Generation
Basin Electric	348,345	600,401	63%*
Central MN Municipal Power Agency (CMMPA)	272,980	53,372	20%
Dairyland Power Cooperative	797,439	110,231	14%
East River Power Cooperative	354,758	See Basin*	See Basin*
Great River Energy	10,827,753	1,694,982	16%
Heartland Power District	496,686	55,121	11%
Interstate Power & Light	834,609	80,909	10%
L&O Power Cooperative	253,654	See Basin*	See Basin*
Minnesota Municipal Power Agency (MMPA)	1,290,712	412,862	32%
Minnesota Power	6,417,331	2,137,718	33%
Minnkota Power Cooperative	1,870,797	233,322	12%
Missouri River Energy Services (MRES)	1,019,479	135,686	13%
Otter Tail Power Company	2,135,195	965,724	45%
Southern MN Municipal Power Agency	2,835,655	452,004	16%
Xcel Energy	31,060,532	5,297,796	19%
Total	60,815,925	12,860,128	21%

Source: Minnesota Office of Energy Security, Progress on Compliance by Electric Utilities with the Minnesota Renewable Energy Objective and the Renewable Energy Standard, January 7, 2011.



MN's Conservation Improvement Program

▣ Requirements

▣ Spending mandate

- ▣ MN electric utilities must spend 1.5 percent of their revenues on their CIP. Xcel must meet a higher standard of 2 percent.
- ▣ Natural gas utilities must spend 0.5 percent of revenue.

▣ Energy savings goal

- ▣ MN utilities must set an energy savings goal for their CIP equal to 1.5 percent of retail sales per year.
- ▣ Utilities are not required to meet the goal if the OES determines that it is not cost effective.

Minn. Stat. 216.241

MN's Conservation Improvement Program

How MN Compares to other states

- Minnesota is the only Midwestern state with a spending requirement.
- 26 states have some type of energy savings goal.
- According to the American Council for an Energy – Efficient Economy, MN has the most aggressive energy efficiency program in the Midwest and the eighth most aggressive in the nation.

Impact of MN's RES

Impact of MN's RES

- ❑ By design, MN's RES will raise the cost of producing electricity
- ❑ According to the Congressional Budget Office:

“Either an RES or a CES would raise the overall cost of producing electricity in the United States. Without such a standard, generators in competitive electricity markets would choose the mix of sources that maximized their profits, and in regulated markets, regulators would tend to require a mix that minimized the cost of electricity production. An RES or CES would induce them to alter that mix and produce electricity in a more costly manner.”

Congressional Budget Office, The Effects of Renewable or Clean Electricity Standards, July 2011

Impact of MN's RES

- Economic impact of an aggressive statewide RES would be larger than an evenly applied federal RES.
 - A statewide RES limits the cost increase to within the state, which makes the state's energy rates less competitive, and, thereby, makes the entire state less competitive.
 - Under a federal RES, MN might gain a competitive advantage due to our in-state wind resources.

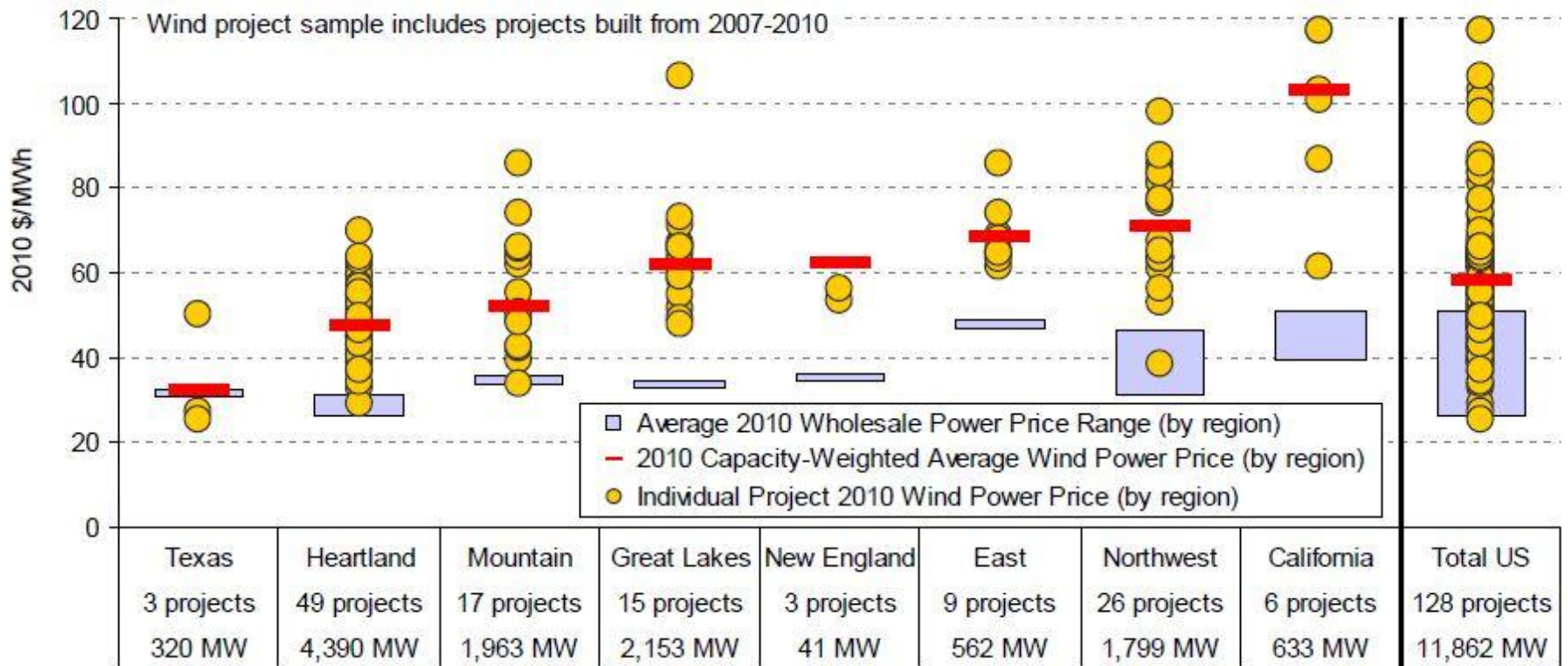
Impact of MN's RES

The evidence linking MN's RES with higher costs

- ❑ The average price of electricity in all states with an RES is 40.5 percent higher than the average price in states without an RES. (Institute for Energy Research, Energy Regulation in the States: A Wake-up Call, Appendix 1.)
- ❑ The price of electricity in MN is slightly higher than the average price in states without an RES. Between 1990 and 2009, MN moved from the 9th lowest electricity rate in the nation to the 20th lowest. (EIA.)
- ❑ Utilities cite cost as a major obstacle to meeting renewable mandates in RES compliance reports.
- ❑ Rural electrical cooperatives blame green energy mandates for sharp increases in electricity rates.
- ❑ Investor-owned utilities identify the RES as part of the need for a rate increase in recent requests.
- ❑ Utilities are raising surcharges on customers for their investments in renewable energy.

Impact of MN's RES

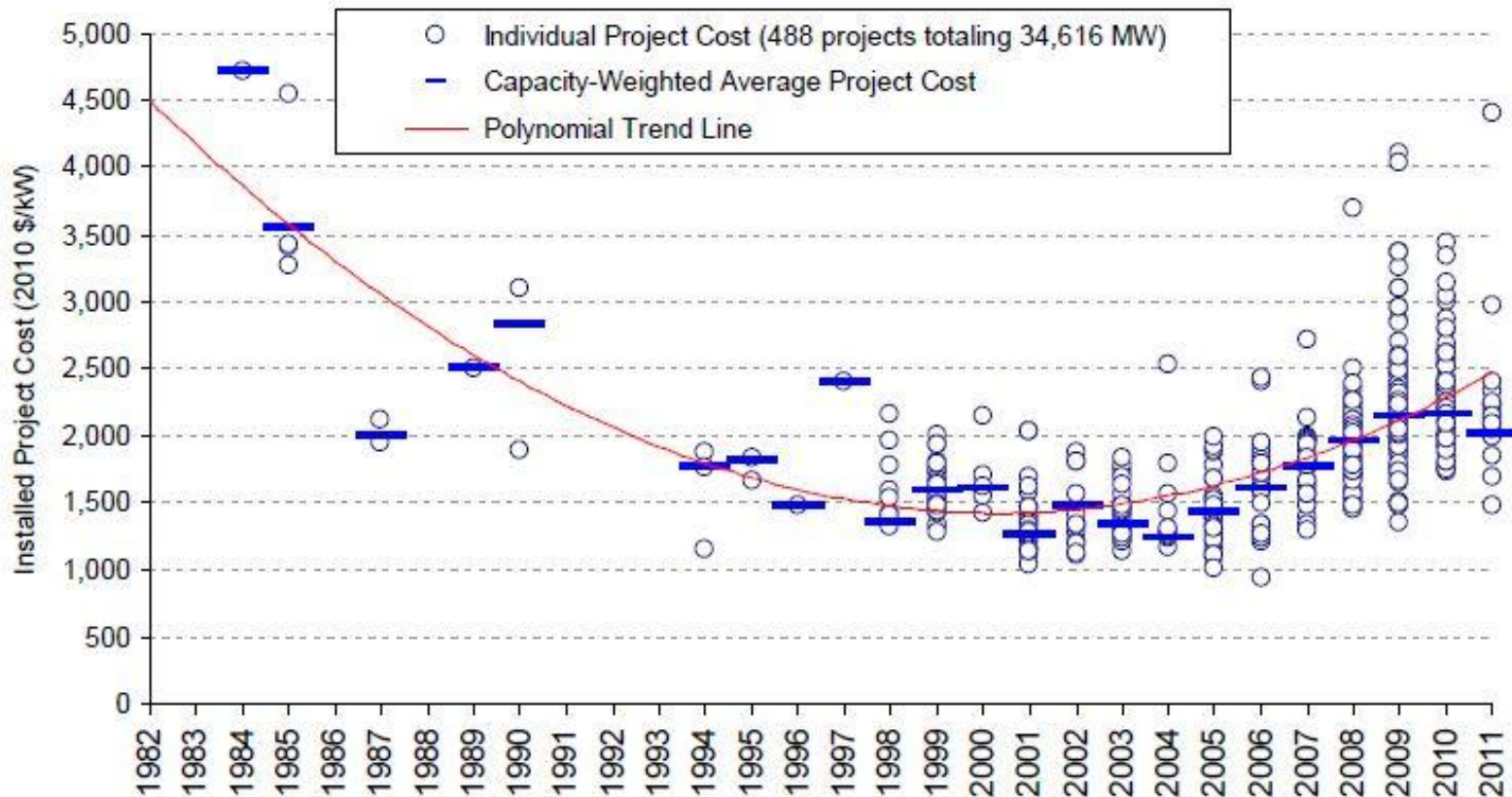
Wind and Wholesale Electricity Prices by Region: 2007-2010 Projects Only



Source: U.S. Department of Energy, 2010 Wind Technologies Market Report, June 2011.

Impact of MN's RES

Installed Wind Power Project Costs over Time



Note: 2011 data represent preliminary cost estimates for a sample of 17 projects totaling 1.1 GW that have either already been or will be built in 2011, and for which reliable cost estimates were available.

Source: Berkeley Lab (some data points suppressed to protect confidentiality)

Source: U.S. Department of Energy, 2010 Wind Technologies Market Report, June 2011.

Impact of MN's RES

RES Impact on carbon emissions may be less than expected

- Two recent studies from Bentek Energy question whether adding wind to the electricity grid causes substantial reductions in carbon emissions.
 - “The use of wind energy by Public Service Company of Colorado has resulted in increased levels of SO₂, NO_x and CO₂ from coal plants in the non-attainment area. Wind-induced coal cycling in the Electric Reliability Council of Texas has resulted in increased SO₂ and NO_x, with only minimal savings of CO₂.” Bentek Energy, How Less Became More (April 16, 2010).
 - “This study, the first to systematically assess emission reduction performance based on **actual generation and emissions data** across a variety of regions, reveals that actual CO₂ reductions through wind generation are either so small as to be insignificant or too expensive to be practical.” Bentek Energy, The Wind Power Paradox (July 19, 2011).

Impact of MN's RES

Emissions Savings per MWh of Wind; Cost of Saving 1 Ton of CO2 per Region

	SO2 (lbs/MWh)	NOx (lbs/MWh)	CO2 (tons/MWh)	CO2 (\$/MWh/ton)
ERCOT (Texas)	1.2	0.7	0.5	\$71
BPA (Pacific NW Region)	0.1	0.2	0.1	\$420
CAISO (California)	0.0	0.1	0.3	\$114
MISO (Midwest)	4.9	2.0	1.0	\$33
U.S. Avg	2.2	1.1	0.6	\$56
AWEA	5.7	2.3	0.8	\$42

Note: Cost of saving 1 ton of CO2 is valued on the federal government tax credit that is provided for each MW of wind generate.

Source: Bentek Energy, The Wind Power Paradox (July 19, 2011).

Impact of MN's CIP

Impact of MN's CIP

- One goal of the CIP is to reduce costs by requiring cost-effective energy efficiency investments. This is considered necessary regulatory tool to counter a utility's incentive to sell ever greater amounts of electricity. As such, it's a classic example of a regulatory tool aimed at fixing a "market failure."
- However, the cost impact of MN's CIP is unclear.

Impact of MN's CIP

The evidence linking MN's CIP with higher costs

- Utilities are spending more money on their CIPs. IOU spending on their CIPs is estimated to rise from \$50.2 million in 2005 to \$97.6 million in 2012.
- Utilities waste money on energy efficiency programs that are not cost effective.
- Minnesota is not reducing energy consumption relative to other states.
 - Minnesota's ranking for electricity sales per residential customer remained unchanged between 1990 and 2009.
 - Minnesota's ranking for electricity sales per commercial and industrial customer actually fell from 32 in 1990 to 43 in 2009.

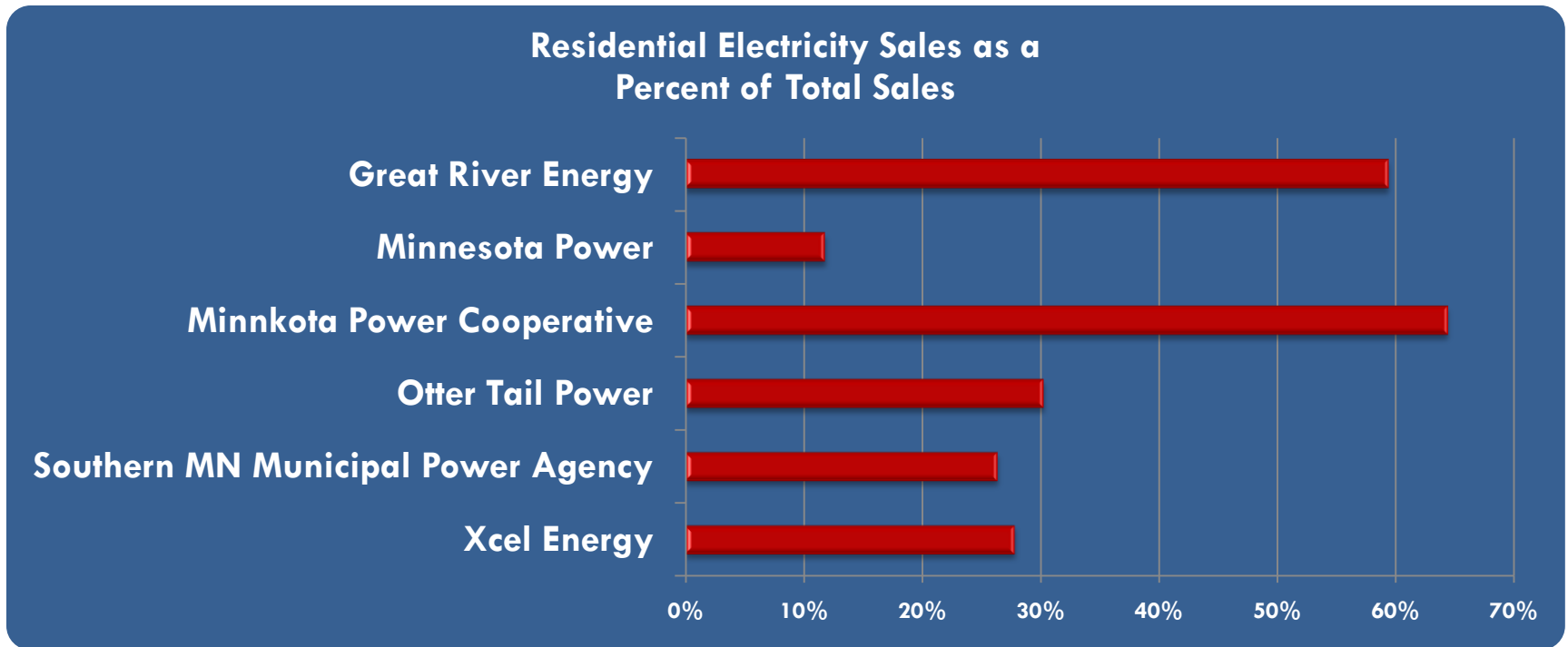
Impact of MN's CIP

Electric CIP Spending, Energy Savings, and CO2 Savings, 2009

	Spending	kWh Savings	Dollars per kWh Saved	CO2 Savings (tons)	Dollars per ton of CO2 Saved
Investor-Owned Utilities	\$69,653,223	439,449,001	\$0.16	400,558	\$173.89
Cooperative CIP Aggregators	\$60,514,179	123,406,522	\$0.49	112,485	\$537.98
Municipal CIP Aggregators	\$10,851,915	61,472,442	\$0.18	56,032	\$193.67
Other Cooperatives	\$433,708	4,361,754	\$0.10	3,976	\$109.08
Other Municipals	\$3,101,115	19,473,490	\$0.16	17,750	\$174.71
Total	\$144,554,140	648,163,209	\$0.22	590,801	\$244.67

Source: Minnesota Office of Energy Security, Minnesota Conservation Improvement Program Energy and Carbon Dioxide Savings Report for 2008-2009

Impact of MN's CIP



Sources: Utility Integrated Resource Plan filings before the Minnesota Public Utilities Commission.



Other perspectives on costs/benefits

Other perspectives on costs/benefits

- What proponents of green energy mandates are saying
 - Green energy mandates will spur job growth.
 - Roger Bedzek, American Solar Energy Society, Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century (2007).
 - United Nations Environment Programme, Green Jobs: Towards Decent Work in a Sustainable, Low Carbon World (2008).
 - U.S. Conference of Mayors, U.S. Metro Economies: Current and Potential Green Jobs in the U.S. Economy (2008).
 - Center for American Progress, Green Recovery: A Program to Create Jobs and Start Building a Low-Carbon Economy (2008).
 - The Pew Charitable Trusts, The Clean Energy Economy: Repowering Jobs, Businesses and Investments Across America (June 2009).
 - Brookings Institute, Sizing the Clean Economy: A National and Regional Clean Jobs Assessment (2011).

Other perspectives on costs/benefits

- Green energy mandates will substantially reduce carbon emissions, as well as criteria pollutants.
 - Studies reviewed by the CBO estimate carbon reductions between 5 and 14 percent.
- Green energy mandates will not cause a substantial rate increase in rates and can even result in energy savings.
 - American Wind Energy Association cites an EIA study as evidence that a 25% RES by 2025 can net \$2 billion in savings for U.S. consumers. AWEA also cites a Union of Concerned.
 - Think Progress cites the CBO as evidence that rate increases will be “extremely small.”
 - Fresh Energy cites recent Xcel testimony before the PUC, claiming recent bids for new wind power contracts matched the price of natural gas. They also Minnesota Power filings, claiming they show the Bison 2 wind farm will cost the same as their ND coal plant.

Other perspectives on costs/benefits



“There’s a common myth perpetrated by the anti-clean energy crowd that renewable energy standards and carbon-reduction polices will make energy costs skyrocket and derail the economy. But experience proves exactly the opposite.”

-- Stephen Lacey, Think Progress Blog, June 1, 2011



The need for more meaningful and actionable
cost/benefit information

The need for more meaningful and actionable cost/benefit information

- Meaningful and actionable cost/benefit information is essential to understanding the impact of Minnesota's RES and CIP.
- From the beginning, Minnesota's RES and CIP requirements did not receive an adequate amount of scrutiny. The 2006 Minnesota Wind Integration Study was the only serious research leading up to the Next Generation Energy Act. However, it only addressed one small part of the cost equation—the cost impact of the operational effects of the variability and uncertainty of wind. Costs of capital investment, transmission, and O&M were not part of the study.
- Since the NGEA of 2007 passed, there has not been a coordinated effort to study the impact of integrating wind into the electricity grid
- Information on the RES and the CIP is never presented in a meaningful or understandable format for ratepayers. The information that is presented is incomplete and, as such, misleading. Certain CIP is especially open to question.

The need for more meaningful and actionable cost/benefit information

- MN's RES was amended in the 2011 legislative session to require utilities to estimate the rate impact of the RES by October. Estimates must also be submitted in each integrated resource plan or plan modification.

Conclusion: Why we must care about the cost impact of Minnesota's green energy policies

Conclusion

- Energy costs are growing burden on families. U.S. families at all points on the income scale are spending a larger portion of their budgets on energy that they were a decade ago.
- Energy costs are a growing burden on businesses. National Federation of Independent Business surveys showed that electricity rates are the 9th most pressing problem for small business owners in 2008 compared to 19th in 2000. Energy costs except electricity was the 2nd most pressing problem in 2008 compared to 10th in 2000.
- To retain jobs and remain competitive, Minnesota needs affordable energy. Minnesota does not compete well against other states in terms of business costs according to the Milkin Institute and Moody's Economy.com

Conclusion

- ❑ Though electricity prices remain competitive, this competitive advantage is slipping.
- ❑ Uncompetitive electricity rates may already be deterring business development in MN.
 - ❑ Example: In 2008, Novozymes—a manufacturer of enzymes for making ethanol—chose to locate a new plant in Blair, Nebraska versus Albert Lea, MN. The *Albert Lea Tribune* reported that “Blair had a big advantage if the company’s decision came down to electrical rates.”

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