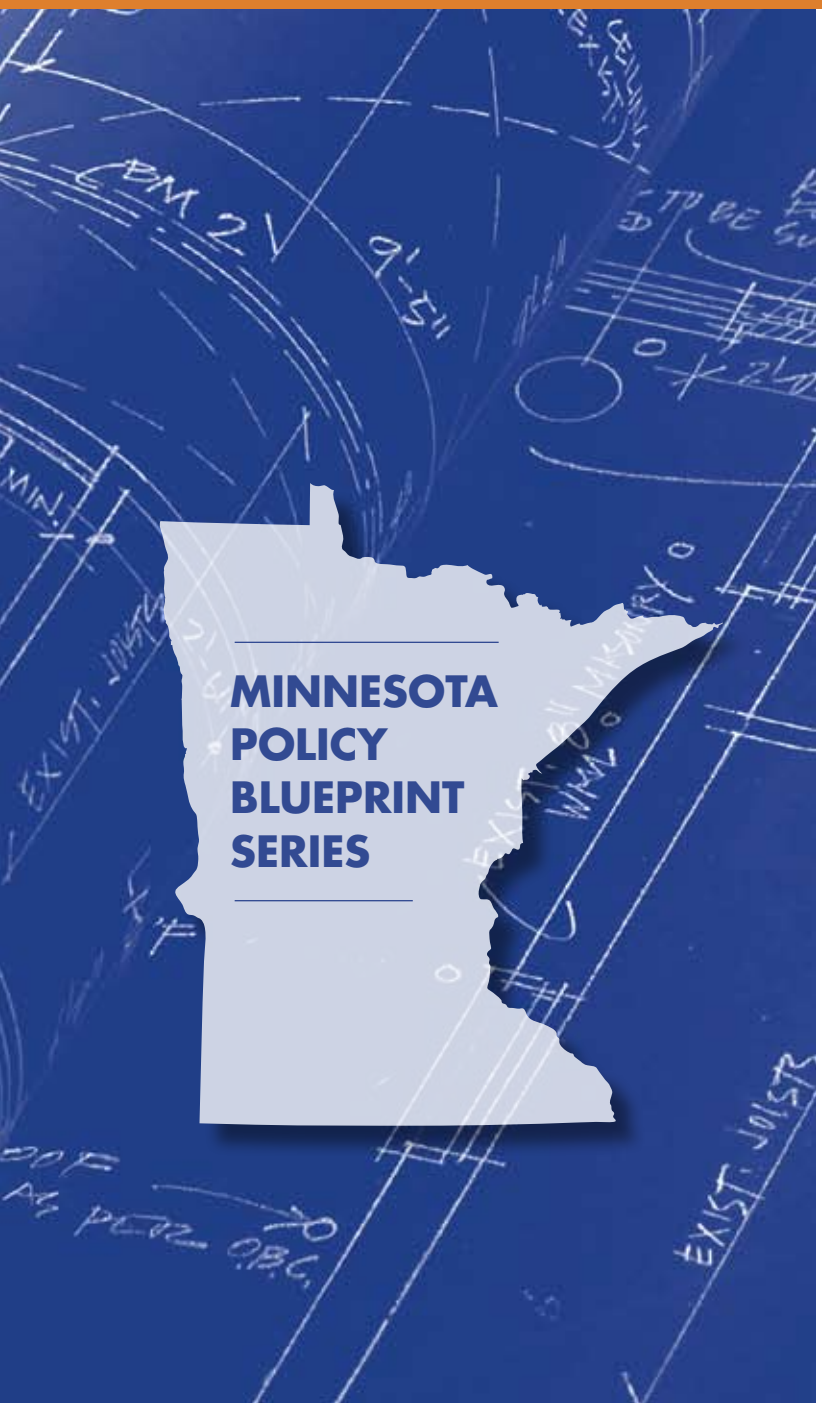
Recommendations for Promoting Affordable and Competitive Energy Rates in Minnesota



Peter J. Nelson

CENTER OF THE AMERICAN EXPERIMENT

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Peter J. Nelson, J.D., Policy Fellow

Executive Summary

Energy affordability is vital to Minnesota's ability to compete both nationally and globally. For nearly three decades, comparably low energy prices have given Minnesota a competitive advantage, one of the few cost advantages that Minnesota offers. Lose that advantage and Minnesota will be an even tougher sell for business development. Unfortunately, this report reveals that Minnesota is, in fact, losing this competitive advantage. The evidence shows that Minnesota energy prices are rising due, in large part, to policies that promote green energy. While green energy is certainly a worthy goal, the uncertainty over its benefits do not justify the clear cost that rising energy prices are imposing on Minnesota.

This report offers a set of recommendations to reintroduce energy affordability as a key priority. Many of these recommendations offer straightforward repeals of the most costly and unjustifiable green energy policies. Repealing certain policies will be politically difficult in the short term. Therefore, short of repeal, this report also recommends additional policy options to mitigate the harm caused by Minnesota's green energy policies.

Not long ago, Minnesota promoted green energy through a flexible approach that gave sensible consideration to the state's need for affordable energy. Minnesota would regain that flexibility by adopting the following recommendations.

(I) Renewable Energy Standard (RES)

Recommendation One: Repeal the RES mandate.

Recommendation Two: Absent a repeal of the RES, amend it to mitigate its adverse impacts on electricity prices and system reliability by adopting one of the following options.

- Option 1: Automatically exempt utilities from the RES when renewable energy is not cost competitive with certain intermediate-load alternatives.
- Option 2: Adjust a utility's RES based on its ability to add cost-effective renewable technologies.
- Option 3: Transition the renewable energy standard into a low carbon/alternative energy standard, which would allow utilities to consider large hydro, nuclear, high-efficiency coal and energy efficiency in addition to wind and more convential renewables.

Recommendation Three: Require utilities to report regularly on the net impact of wind energy across their entire systems, including impacts on electricity rates, baseload power plants and system reliability.

(II) Conservation Improvement Program (CIP)

Recommendation Four: Eliminate the CIP's minimum spending requirement (MSR) and energy savings goals and, instead, regulate energy efficiency and demand-side management exclusively through the integrated resource planning process.

Recommendation Five: As an alternative to eliminating the MSR and the energy savings goal, amend the CIP to be more flexible by adopting the following four-part strategy.

- First, require the Office of Energy Security (OES) to adjust the MSR and energy savings goals to account for the higher cost of residential efficiency programs.
- Second, require the OES to adjust the MSR and energy savings goals based on a utility's size.
- Third, limit the CIP to energy efficiency programs that return a positive cash flow for the life of the program.
- Fourth, enable small municipalities to aggregate their spending into a jointly administered CIP.

Recommendation Six: Give primary consideration to total resource use and ratepayer impact when evaluating the cost effectiveness of energy efficiency programs.

Recommendation Seven: Audit the CIP's actual costs and energy savings.

(III) Restrictions on Baseload Power

Recommendation Eight: The legislature should repeal the ban on the production or importation of electricity from new carbon-emitting power plants.

Recommendation Nine: The legislature should repeal the moratorium on nuclear power plants.

(IV) Transparency and Accountability

Recommendation Ten: Require utilities to report regularly on the rate impact of the renewable energy standard, the conservation improvement program, and restrictions on building new generation.

Recommendation Eleven: Require utilities to disclose the cost of green energy policies on ratepayer bills.

Recommendation Twelve: Require a triennial report that analyzes the unintended consequences of Minnesota's green energy policies.

Recommendation Thirteen: Instruct regulators that their primary purpose is to ensure that retail consumers of energy receive adequate and reliable services at reasonable and competitive rates.

Overview

A sound energy policy for Minnesota must balance a number of often competing goals. Most importantly, energy should be affordable, reliable, efficient and environmentally responsible. In recent years, Minnesota's energy policy has been weighted far too heavily against affordability. This must be corrected. At a time when the economy remains weak, Minnesota businesses, families, and community groups need every cost advantage they can get.

The need to keep energy affordable in Minnesota should go without saying. Affordable energy is vital to Minnesota's progress. Energy costs are directly linked to business profitability and jobs. The key issue for businesses is whether the cost of energy in Minnesota is competitive with energy costs elsewhere. Indeed, Minnesota businesses need competitive electricity rates and fuel prices in order to compete nationally and globally.

Affordable energy is also tightly linked to the material well-being of Minnesota families, schools, churches, and other community groups. Not incidentally, a strong link also exists between economic growth and environmental health.

Nonetheless, Minnesota lawmakers consistently

advance and too often pass laws that increase the cost of energy. Usually these policies aim to reduce carbon emissions or, more broadly, to accelerate Minnesota's move to a green energy future. It all usually sounds benign enough. However, impatient moves to this future nearly always depend on making today's energy more expensive. Indeed, shifts to a green energy future chiefly depend on expensive subsidies, higher taxes and bans on low-cost energy.

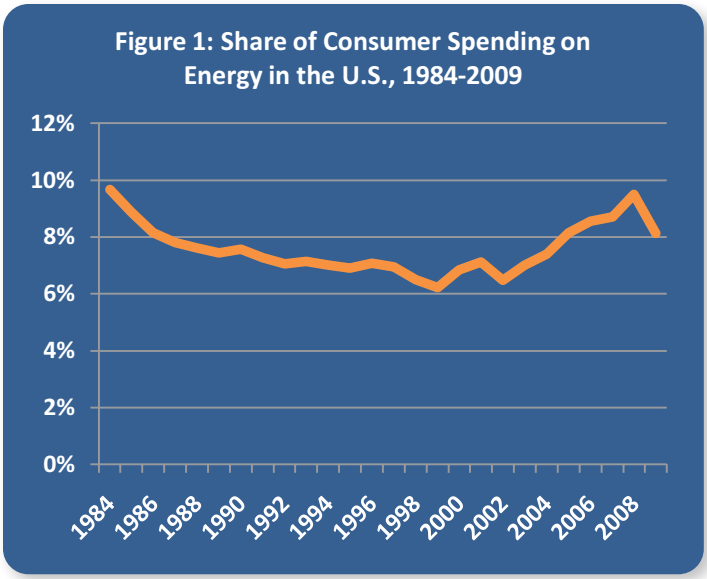
It would be one thing if these new and costly green energy policies had clear environmental benefits, but most don't. In fact, some policies may actually, on net, harm the environment. It's time to take a critical look at these policies and, where necessary, change and even reverse course. As we rethink our energy policy, it's critical to understand that we can chart a new course without compromising our environmental values.

This report begins by showing the need for affordable energy in Minnesota. It then explains in Part II why a distinction must be made between green energy laws and environmental protection laws. While environmental protection can often justify regulations that raise the price of energy, green energy does not. Part III outlines the green energy policies that are currently in statute or up for consideration in Minnesota. These green energy policies do not come without a cost, and Part IV reveals the connection between these policies and Minnesota's rising energy prices. This report ends with a variety of recommendations to ensure affordable and competitive energy rates in Minnesota.

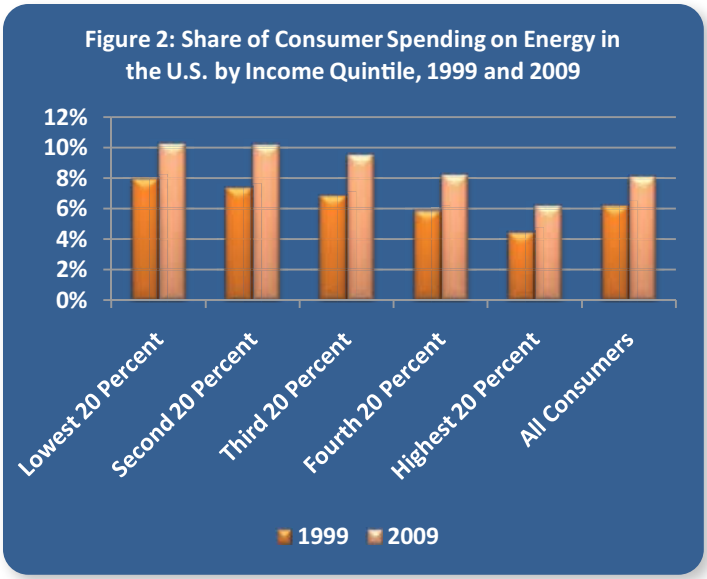
Part I: Energy affordability and Minnesota families and businesses

Minnesota families and businesses spend a large portion of their budgets on energy. Unfortunately, in recent years, the slice of everyone's budget devoted to energy has been growing. Of course, more money spent on energy means less spent on everything else. For families, that can mean fewer piano lessons and shorter vacations. It can even mean a less healthy diet or a less safe neighborhood. For businesses, that means less spent on salaries, which means fewer and lower paying jobs for Minnesota families.

The growing burden on families. For most families, energy is the largest expenditure next to food, shelter, and transportation. U.S. families at all points on the income scale are spending a larger portion of their budgets on energy than they were a decade ago, as shown in Figures 1 and 2. This is true despite an anomalous drop in 2009 caused by the recession. Not surprisingly, the energy burden



Source: Bureau of Labor Statistics, Consumer Expenditure Survey Database.



Source: Bureau of Labor Statistics, Consumer Expenditure Survey Database.

is higher on lower-income households. Moreover, according to Fisher Sheehan and Colton—a law and economics research and consulting firm that advocates for affordable energy—the home energy affordability gap in Minnesota is much wider than the U.S. average.[1]

The growing burden on business. Energy also accounts for a substantial portion of the cost of doing business for both small and large businesses. That's why Moody's Economy.com and the Milkin Institute include "energy cost" as one of four key components in their respective indices that measure the cost of doing business by city and state.[2] In fact, Moody's weights energy second in importance.[3]

Energy costs have become a more pressing problem for business owners over the past fifteen years. *Small Business Problems and Priorities*, a survey conducted by the National Federation of Independent Businesses, showed that "'Energy Costs, Except Electricity' ranks as the second-most pressing problem for small business owners in 2008."[4] These energy costs ranked 4th in 2004, 10th in 2000, and

Subsidized green jobs are not an economic stimulus

Incredibly, some policymakers argue that costlier green energy can help Minnesota's competitiveness by spurring the creation of new green jobs. The claim is preposterous on its face to anyone who understands basic economics. Yes, new jobs would be created to build new windmills, new transmission lines, and anything else that advances government-subsidized and mandated green energy. But these new green jobs would come at the expense of job losses at every other company that would end up paying higher energy costs.

To understand why jobs would be lost, consider this Minnesota version of the old economics parable of the broken window.[5] If the state required a window to be broken at every Minnesota business each week, it would create plenty of new jobs in the window repair business and new jobs at two of Minnesota's premier companies, Andersen Corporation and Marvin Windows and Doors. Despite these new jobs, breaking perfectly good windows would be wasteful and on net harm the economy. The money each business spent on repairing windows would be unavailable for other business activities, like salaries and product development. In the same way, policies that force Minnesota businesses to buy costlier green energy might be a boon for certain businesses, such as windmill developers, but every other business would suffer.[6]

Economic analyses confirm that jobs and economic productivity suffer under green energy mandates and subsidies. A study of Spain's economy found that 2.2 jobs were destroyed for every green job that was created by the government's green energy programs.[7] In Denmark, one study found that the economic value per additional job in the wind industry was 13 percent less than the industrial average.[8] Finally, in a review of the literature on the German experience, most research finds an initial employment boost followed by long-term employment declines after higher energy prices set in.[9]

In contrast to this research, there are economic studies that show a net increase in jobs due to green energy programs. However, these studies are nearly always published or commissioned by green energy advocacy groups. As such, they shoulder a substantial bias in favor of green energy.[10] Admittedly, research showing employment losses can suffer from similar biases. Consequently, the weight of the argument over green jobs should be borne by the common sense economic understanding that higher energy prices will be a drag on the overall economy.[11]

17th in 1996. In the same 2008 survey, "Electricity Costs (Rates)" ranked 9th, up from 10th in 2004, 19th in 2000 and 21st in 1996.

To retain jobs and remain competitive, Minnesota needs affordable energy. Because energy poses a substantial cost to business, maintaining competitive electricity rates and fuel prices is essential to maintaing a competitive business climate in Minnesota. Simply put, lower energy costs make Minnesota products cheaper to produce relative to products produced in states and countries with higher energy costs.

Unfortunately, Minnesota does not compete well against other states in terms of business costs. Minnesota ranks 13th highest on the Milkin index and 23rd highest on the Moody's Economy.com 2008 index.[12] The cost of doing business in the Twin Cities relative to the nearly 400 other metropolitan areas in America, offers a more sobering comparison. The Twin Cities is the 36th highest-cost metro area on the Moody's Economy.com 2008 Cost of Doing Business Index. The Twin Cities is actually the costliest metro area when the comparison is narrowed down to the Midwest.[13] Energy cost is the only factor in either index that gives Minnesota a cost advantage over the average state.

Though electricity prices in Minnesota remain competitive, this competitive advantage is slipping. In 1990, the price of electricity in Minnesota was ninth lowest in the country. Two decades later, in 2009, Minnesota's ranking slipped to twentieth. All the while, with the exception of Wisconsin, electricity prices for Minnesota's neighbors have become more competitive (see Appendix C).

Part II. Green energy, environmental protection, and affordability

While Minnesota's economy needs affordable energy to remain robust and competitive, Minnesotans also value and demand a clean environment. Setting the right balance between affordable and environmentally responsible energy is no easy task. The task, however, is not so hard in regards to certain environmental policies that promote green energy solely to reduce carbon emissions. Ultimately, it's difficult to justify any green energy policy that imposes a substantial economic cost. That's primarily because there's so much uncertainty in establishing the benefits, if there are any, from curbing carbon emissions.

This report makes a distinction between green energy laws and environmental protection laws. Generally speaking, green energy laws aim to mitigate climate change by reducing carbon emissions, while environmental protections laws aim to reduce specific pollutants, such as mercury, that are proven to harm the environment. Understanding this distinction is essential to setting an appropriate balance between environmental responsibility and affordability. While there is usually a sound or at least measurable cost-benefit justification for environmental protection laws, the same cannot be said for green energy laws.

Trading some affordability for measurable reductions in pollution makes sense. Indeed, when a pollutant's harm is real and well understood, a sound energy policy should give special weight to protecting the environment.[14] It's much harder to justify trading affordability for green energy when its benefits are speculative and highly uncertain. [15]

A 2010 National Research Council study, commissioned by the Energy Policy Act of 2005, acknowledges that attempts to measure the benefits of reducing carbon dioxide remain speculative.

> Given the uncertainties and the still preliminary nature of the climate-damage literature, the committee finds that only rough order-of-magnitude estimates of marginal climate damages are possible at this time. Depending on the extent of future damages and the discount rate used for weighting future damages, the range of estimates of marginal global damages can

> vary by two orders of magnitude, from a negligible value of about $1 per ton to $100 per ton of CO2-[equivalent].[16]

Due to this uncertainty, the National Research Council declined to "conduct its own modeling analyses of damages related to climate change."[17] According to officials there, "Attempting to estimate single values would be inconsistent with the rapidly changing nature of knowledge about climate change and the extremely large uncertainties associated with estimation of climate-change effects and damages."[18] This decision suggests that there is currently no reliable method for demonstrating a benefit from reducing carbon emissions.[19]

Without a reliable method for demonstrating a benefit, there is no reasonable cost-benefit justification for Minnesota to devote resources to force a transition to green energy.

Further, the fact that climate change operates on a global scale makes it all the more difficult to justify green energy policies that require Minnesota to act alone outside of a national or global framework. Because climate change is global, any benefit from Minnesota green energy laws that reduce carbon emissions accrue globally. As a matter of fairness, Minnesota should not be shouldering an extra-heavy burden, at least in comparison to other states and industrialized nations.

"While a number of states require a similar or higher percentage of renewable electricity by 2025, Minnesota's mandate is arguably the most stringent."

Part III. A survey of current and proposed green energy laws in Minnesota

The following are Minnesota's principal green energy laws.

- **Ban on the production or importation of electricity from new carbon-emitting power plants.** Various laws ban utilities from pursuing affordable energy options like energy generated from coal, natural gas, and nuclear fuels. Minnesota bans the construction of any new large energy facility that produces carbon emissions, thereby effectively banning any new coal or natural-gas fired baseload power plant.[20] (A baseload power plant is one that delivers a constant supply of power to meet the minimum demand of the electricity grid.) Electric utilities are also prohibited from importing electricity from new carbon-emitting power plants. Among states that rely on coal, Minnesota is the only state with such restrictions on energy from new carbon-emitting power plants.[21] Washington and California also have substantial restrictions on new carbon-emitting power plants, but even their restrictions are less onerous than Minnesota's. Washington requires any new power plant to offset 20 percent of its carbon dioxide emissions, and California prohibits new power plants with more greenhouse gas emissions than a combined-cycle natural gas power plant. In contrast, Minnesota requires a 100-percent offset and does not exempt natural gas plants that provide baseload power from the ban.

- **Renewable Energy Mandate.** Electric utilities must generate or purchase 25 percent of their electricity from renewable energy sources by 2025.[22] Xcel Energy must meet a higher standard of generating or purchasing 30 percent renewable energy by 2020. While a number of states require a similar or higher percentage of renewable electricity by 2025, Minnesota's mandate is arguably the most

stringent. That's because Minnesota does not have an effective cost cap to exempt utilities from compliance if the cost of the mandate runs too high. Every state with a renewable mandate caps the cost of the mandate in some way. Minnesota's cap is left entirely to the discretion of the Minnesota Public Utilities Commission (PUC).[23] In contrast, Colorado and Illinois cap the cost at 2 percent and 2.015 percent of a customer's total bill.[24] Both California and New York cap costs to the money available in their respective renewable energy funds.[25] Importantly, a well-defined cost cap by its very nature requires states to account carefully for the cost of their mandates. As will be discussed in Recommendation Ten, there is presently no accounting for the cost of Minnesota's mandate.

- **Energy Efficiency Mandate.** Minnesota's utilities must administer a Conservation Improvement Program (CIP) that is designed to reduce their customers' energy use through efficiency and conservation projects.[26] Electric utilities must spend 1.5 percent of their revenues on their CIP. Like the renewable mandate, Xcel must meet a higher standard and spend 2 percent of revenues. Natural gas utilities must spend 0.5 percent of revenues. Minnesota is the only Midwestern state with such a spending requirement.[27] In addition, state law also requires utilities to set an energy-savings goal for their CIP equal to 1.5 percent of retail sales per year, a goal that requires higher spending than state law requires. Utilities are not required to spend money to achieve this goal if the Office of Energy Security (OES) determines that it is not "cost-effective." Twenty-six states have some type of energy efficiency goal.[28] Based on the American Council for an Energy-Efficient Economy, Minnesota has the most aggressive energy efficiency program in the Midwest and the eighth most aggressive in the nation.[29]

- **Community-Based Energy Development (C-BED) Tariff.** Utilities are required to consider community-based renewable energy projects to help satisfy their renewable energy requirements when they need to construct or purchase a new generation facility.[30] The C-BED tariff hopes to encourage small-scale and locally-owned renewable energy production. The rationale behind C-BED focuses on maintaining local ownership over renewable energy production in order to retain its economic benefits within the local community. While C-BED tariffs are voluntary for utilities, the PUC must "consider the efforts and activities of a utility to purchase energy from C-BED projects" when it evaluates the utility's good-faith efforts to meet the renewable energy mandate.

> "Of the top five corn-producing states in America, Minnesota (fourth) is the only state with an ethanol mandate."

- **Biofuel Mandates.** Currently, gasoline and diesel fuel sold in Minnesota must be blended with a certain amount of biofuel. Gasoline must contain 10-percent ethanol and, with federal approval, must contain 20-percent ethanol by 2013.[31] Of the nine states that mandate ethanol, most require a 10-percent blend.[32] However, unlike Minnesota, most states exempt higher-octane fuel grades and none plan to increase their mandate to 20 percent. Worth noting, of the top five corn-producing states in America, Minnesota (fourth) is the only state with an ethanol mandate.[33]

  Diesel fuel must contain 5-percent biodiesel.[34] This requirement escalates to 10-percent biodiesel by 2012 and 20 percent by 2015. Minnesota is one of four states with a biodiesel mandate in effect and, among

The Next Generation Energy Act of 2007

Most of Minnesota's green energy laws were either created or expanded through the Next Generation Energy Act (NGEA), which was passed with broad bipartisan support in 2007.

The NGEA included the following provisions.

- Set greenhouse gas reduction goals of 15 percent below 2005 levels by 2015, 30 percent below 2005 levels by 2025 and 80 percent below 2005 levels by 2050.
- Established the renewable energy standard that requires utilities to generate or purchase 25 percent of their electricity from renewable sources by 2025.
- Set annual energy efficiency goals for utilities that, in effect, requires utilities to expand their Conservation Improvement Programs well beyond their minimum spending requirements.
- Expanded C-BED tariffs to all renewable energy sources.
- Banned the construction of new energy plants that emit carbon dioxide, as well as the importation of electricity from new plants that emit carbon dioxide.
- Required utilities to estimate the future price of federal carbon regulations to be used when reviewing acquisitions of energy resources.
- Directed the Commissioner of the Department of Commerce to submit a climate change action plan.

the four, it is the highest.[35] Earlier this summer, Massachusetts suspended their biodiesel mandate citing issues over cost and complexity.[36]

- **Renewable Development Fund.** Each year Xcel Energy must contribute money into the Renewable Development Fund to develop renewable energy sources.[37] Funding levels are based on the volume of spent nuclear fuel stored in Minnesota. The fund currently collects $19.5 million per year. Over half of this funding—$10.9 million—is allocated for the state's Renewable Energy Production Incentive. This program primarily provides financial incentives to construct wind facilities. Most of the remaining funds go toward the state's solar rebate program and the University of Minnesota for the Initiative for Renewable Energy and the Environment.

- **Renewable Energy Incentive Programs.** Finally, there are a number of other state programs that provide tax incentives, direct grants, and subsidized loans to encourage the development of renewable energy. See Appendix A for a complete list of these programs.

In addition to these current laws, there are a handful of proposals before the legislature that threaten to further increase the cost of energy on businesses and families.

- **Regional carbon dioxide cap and trade system.** In 2007, Gov. Tim Pawlenty joined the Midwestern Greenhouse Gas Reduction Accord. As part of this agreement, the six participating governors and one Canadian premier agreed to "develop a market-based and multi-sector cap-and-trade mechanism to help achieve [greenhouse gas] reduction targets."[38] Under a cap-and-trade system, carbon emissions would be capped at a set level for the entire region and carbon sources would be given allowances to emit carbon. These allowances could be traded amongst carbon sources that want to emit more or less carbon.

The governors and the premier convened an advisory group to develop recommendations for a regional cap-and-trade system. This group issued its final recommendations in May 2010.[39] Nothing yet commits Minnesota to anything, but the recommendations do lay out a plan for a regional cap-and-trade system. The recommendations target emissions reductions at 20 percent below 2005 levels by 2020 and 80 percent by 2050. Only sources that emit 25,000 tons or more of carbon dioxide equivalent per year would be subject to emission caps. Legislation introduced in 2010 called for the Minnesota Pollution Control Agency to draft a rule to enable Minnesota to participate in a regional cap-and-trade system.[40]

Notably, the advisory group's recommendations state up front that the "Midwestern Governors and the Manitoba Premier strongly prefer the implementation of an effective cap-and-trade program at the federal level in both countries, rather than a regional program." While any federal program would be seriously and irredeemably flawed, there is no question it is preferable to a regional program. By forging ahead with a regional approach, the Midwest would cap its energy use while other regions would not. This would seriously disadvantage energy-intensive Midwestern businesses.

- **Low-Carbon Fuel Standard Mandate.** A low-carbon fuel standard (LCFS) would mandate a reduction in the carbon intensity of Minnesota's transportation fuels. To meet the standard, fuel providers would be free to choose their own strategy, which would likely include blending high-carbon fuels with lower-carbon fuels, changing production methods and purchasing carbon credits. Regardless of the strategy, a LCFS mandate would require a transition to higher cost fuels. California passed the nation's first and, to date, only LCFS in 2007, which requires a 10 percent reduction in the carbon intensity of California's transportation fuels by 2020. Legislation introduced in Minnesota in 2009 proposes a similar LCFS.[41]

  An LCFS could be especially expensive in Minnesota for three reasons. First, it's not clear that Minnesota can take advantage of ethanol to meet an LCFS because some life cycle analyses show that ethanol's carbon intensity is actually greater than gasoline. Second, if ethanol can lower gasoline's carbon intensity, there is less capacity to take advantage of ethanol in Minnesota because the state already requires a 10 percent ethanol blend. Third, Minnesota would need to transition away from low-cost Canadian oil imports because Canadian oil requires a more carbon-intensive extraction process. This would be particularly harmful to Minnesota because it imports 80 percent of its oil from Canada, according to the Minnesota Department of Commerce.

  There are also constitutional issues related to an LCFS. Two lawsuits were filed in early 2010 against California, each claiming that the state's LCFS violates both the Supremacy Clause and the Commerce Clause of the federal Constitution.[42]

- **Feed-in tariff.** Generally speaking, a feed-in tariff is a per kilowatt hour payment to a generator of renewable energy that is higher than the market rate. The higher payment covers the higher cost of generating renewable electricity and, thus, eliminates the cost barrier to generating renewable electricity. A feed-in tariff can be structured in many different ways, but by design, all tariffs result in higher electricity rates.

  While feed-in tariffs are widespread across Europe, only five states have feed-in tariffs, all of which are very new and small in scale. Two major issues are developing as these states experiment with feed-in tariffs. First, federal law may preempt certain types of feed-in tariffs.[43] Second, initial analyses are showing

that the feed-in tariffs' economic impacts are worse than expected. The Vermont Department of Public Service modeled the long-term economic impact of their tariff and found that ratepayers will "pay a significant premium for a portion of their electricity for up to 25 years."[44] And, in Oregon, rates were expected to rise by 0.25 percent, but initial estimates of the peak yearly rate impact are 0.45 percent, 0.48 percent, and 1.33 percent for the three major utility companies.[45]

A few different versions of a feed-in tariff have been proposed in the Minnesota legislature.[46] The latest version would provide incentive payments to generators of renewable energy funded through a "public benefits surcharge" billed to ratepayers. The size of the incentive payments would be set to cover the additional cost of generating renewable electricity that exceeds a market-based price.

- **Amendment to the Public Utility Commission's Mission.** A bill proposed in 2010 would require that the PUC "shall, to the maximum reasonable extent, encourage energy efficiency, reduce use of fossil fuels, develop renewable energy sources, and reduce emissions of greenhouse gases."[47] This would effectively force the PUC to make green energy an even larger priority in their decision making, which would aggravate an internal conflict within the PUC. The Minnesota legislature established the PUC to regulate utilities in order to protect consumers from poor service and high rates.[48] This mission to protect ratepayers will be tough to square with green energy goals that more often than not lead to higher rates.

After surveying these green energy policies, it is clear that they all risk raising the cost of electricity. Without exception, each policy is designed to either restrict the production of lower cost carbon-based energy or to spur the production of higher cost renewable energy. Over time, the combined impact of these policies on the cost of energy in Minnesota will be substantial. While most of these policies have barely left the starting line and will take years to implement fully, they are already affecting the cost of energy in Minnesota. The following section examines the evidence that connects rising energy costs to Minnesota's green energy policies.

Part IV. Green energy's connection to rising energy costs

The negative economic effects of Minnesota's green energy policies are beginning to materialize. There is a growing body of evidence that links this rise, in part, to Minnesota's green energy policies. In particular, utilities are increasingly citing the high cost of Minnesota's renewable and conservation mandates in communications with their customers and in filings with the PUC. At the outset, it is important to note that the most burdensome green energy policies are just now being rolled out and that the following evidence, therefore, represents just their initial impact on the price of energy.

Utilities cite cost as a major obstacle to meeting renewable mandates in compliance reports. Each year utilities must file compliance reports with the PUC that detail their progress in meeting the state's renewable energy mandates. In these compliance reports, the PUC asks utilities to "describe all obstacles your organization has encountered or anticipates encountering to meet [the] Minnesota Renewable Energy Standard." Of the twelve utilities that filed compliance reports, only two reported that they don't anticipate any obstacles to meeting their renewable energy objective. The remaining ten all identified cost as either a current or future obstacle. Together, these reports identify a litany of cost drivers associated with Minnesota's renewable energy mandate.

- Utilities are being required to purchase additional energy that they do not otherwise need to meet their renewable targets.
- Utilities are losing money on their long-term contracts for wind because the market price

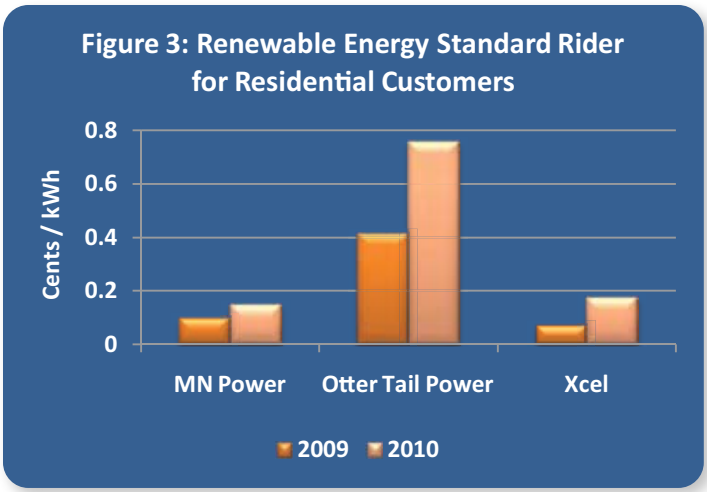
for electricity is now substantially less than their contract prices for wind.

- While wind (with federal tax credits) had been price competitive with natural gas electricity generation for certain utilities, that is no longer the case. Since the passage of the Next Generation Energy Act (NGEA), natural gas prices have dropped and they are expected to remain low and stable for years to come.
- Not-for-profit utilities are not eligible for the various state and federal tax incentives that are available to for-profit utilities.
- It is becoming more costly and difficult to site new wind projects and the transmission lines they require due to increased opposition from local communities.
- Adding new wind to the electricity grid requires costly transmission upgrades.
- Utilities are starting to see larger cost impacts on the operation of their baseload power facilities that must be cycled on and off to compensate for the intermittent nature of wind.
- As more and more electricity is generated from wind, the *price* of electricity at the time the wind blows is being driven lower and lower, without a corresponding reduction in the *cost* of producing electricity from wind.
- Wind developers may be exercising market power over utilities because the utilities are operating under a mandate to purchase their services.
- Some utilities have experienced unexpected and costly failures at their wind facilities, leading to questions over the long-term reliability of their wind facilities.
- Current wind contracts will expire prior to 2025, and new contracts will likely be substantially more expensive due to the increased demand for renewable electricity that will result from fully implementing Minnesota's 25-percent mandate and the implementation of similar mandates in other states.
- Metering requirements, registration fees, and reporting requirements associated with renewable energy credits makes small renewable energy facilities uneconomical.
- The mechanism to recover the costs associated with transmission upgrades associated with adding renewable energy to the grid may be expensive. Further, these costs may be hidden in a cost recovery structure that spreads (and socializes) the cost across all utilities in the transmission grid.

With all of these cost drivers tied to the implementation of wind and renewables, it's no surprise that utilities are blaming recent rate increases on Minnesota's renewable energy mandates, as well as energy efficiency mandates.

> "Utilities are being required to purchase additional energy that they do not otherwise need to meet their renewable targets."

Rural electrical cooperatives blame green energy mandates for sharp increases in electricity rates. In recent years, wholesale electricity prices increased sharply for Minnesota's energy cooperatives. For example, between 2004 and 2008, the cost of power to Itasca-Mantrap Cooperative increased by 40 percent from one supplier and 31 percent from another.[49] As a result, in February 2009, rates increased by 19 percent for the average homeowner. In northwestern Minnesota, Minnkota Power added a surcharge in 2009 to cover $20 million in losses from their wind contracts that lock them into paying 4.5 cents per kilowatt hour when they can only sell the power for 2 cents.[50] They expect to increase rates by 17 percent. The same story is being told in electric coop newsletters across Minnesota.[51] Of course, there are other reasons too, including the economic downturn,



Source: Utility Compliance Filings with the Minnesota Public Utilities Commission.

unexpected power plant outages, and higher fuel costs. Nonetheless, the state's green energy policies are a clear and substantial factor.

Investor-owned utilities identify green energy mandates in requests for rate increases. When an investor-owned utility (IOU) needs to raise electricity rates, they must file a rate case with the PUC, a very long and cumbersome regulatory proceeding. Since 2005, the four major IOUs that serve Minnesota have filed nine different requests to increase rates. In their filings with the PUC, the IOU's cite a number of factors driving the need to increase rates. The economic downturn is a big one. New environmental protection laws that require expensive improvements to existing power plants is another. Most IOUs also identify Minnesota's green energy policies as a major contributor.

In May 2010, Alliant requested a 22-percent increase in its base rates, which is substantially driven by investments in their Whispering Willow Wind Farm.[52] Minnesota Power made a similarly hefty request to increase rates by 18.9 percent in 2009. Company officials explained that "capital spending remains a primary driver for our need for increased revenues" and that "this level of capital investment is necessary to add renewable generation assets …."[53] In its 2005 rate case, Xcel explained that Minnesota's renewable requirements increased capital expenditures and raised the cost of capital.[54] And in its 2008 rate case, Xcel explained how Minnesota's renewable requirements led Xcel to make double the level of capital expenditures in comparison to similar utilities.[55]

In other recent rate cases, Minnesota's renewable mandates might not be a primary driver behind rate increases, but they are always a factor, whether the IOU states so specifically or not.[56]

Utilities are raising surcharges on customers to pay for their investments in renewable energy. On top of the base rate charged to electricity customers, utilities are allowed to bill a surcharge—otherwise known as a rider—to their customers to pay for state-mandated investments in renewable energy that are not accounted for in their base rate. Utility RES riders are growing. As shown in Figure 3, Xcel Energy, Otter Tail Power and Minnesota Power all raised their RES riders by substantial margins in 2010, ranging from 50 to 145 percent.[57]

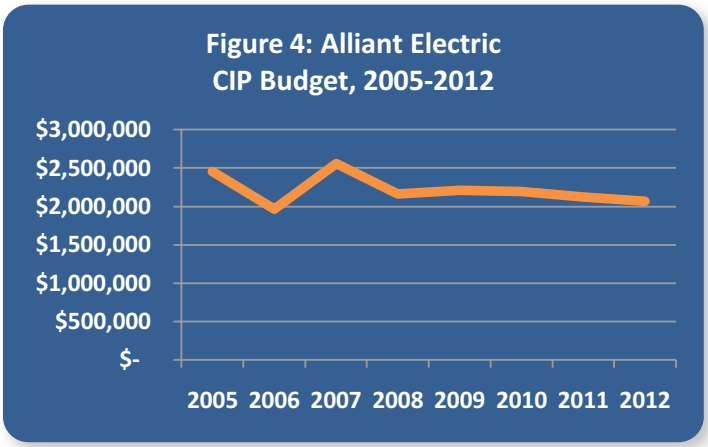
It is very important to note that the RES rider is not a good gauge of the actual cost of Minnesota's RES. To say simply that riders are increasing can be misleading because riders are only one part of the RES cost equation. Thus, it would not be fair to conclude from Figure 3 that Otter Tail Power customers are necessarily paying more to meet Minnesota's RES. Indeed, Otter Tail Power complains that the RES rider exaggerates the cost because it does not account for savings found elsewhere, such as spending less on fuel. Also, as noted, the rider doesn't account for costs that are included in the base rates and these are often substantial. Despite these other cost considerations, the RES rider does indicate that a key part of the cost equation is rising.

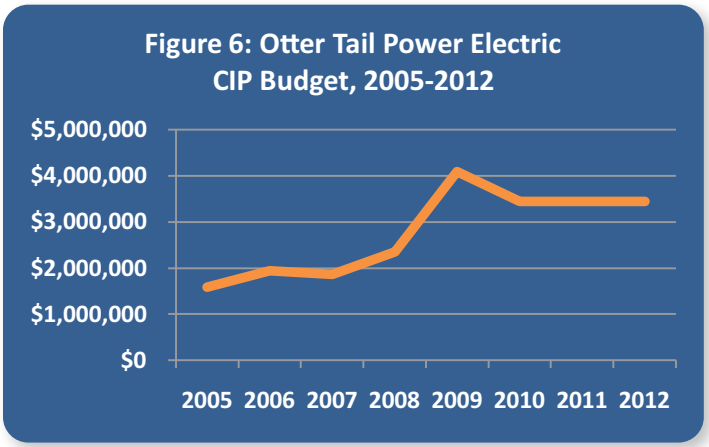
The RES part of the cost equation can add up quickly for Minnesota businesses. The Minnesota Chamber of Commerce sampled the energy consumption of their members that are large customers of Xcel and found that annual energy consumption ranges from 9,717,510 kWh to 392,000,000 kWh.[58] For these businesses, the cost of Xcel's recent request to increase their RES rider to .3145 cents per/kWh would range from $30,562 to $1,232,840 per year.

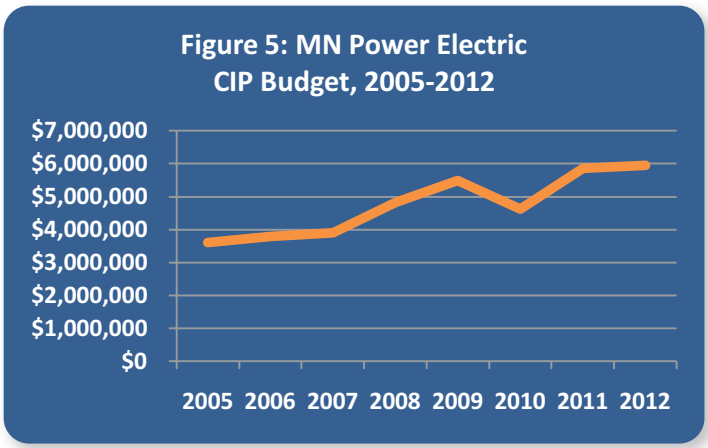
Utilities are spending more money on their Conservation Improvement Program (CIP). Recall that utilities must spend 1.5 percent of their revenues on energy efficiency programs and endeavor to achieve energy savings equal to 1.5 percent of retail sales per year. Due to the transition to an energy savings goal, utilities are planning to spend substantially more on their CIP. As shown in Figures 4 through 7, CIP budgets are rising in three of Minnesota's four investor-owned utilities.

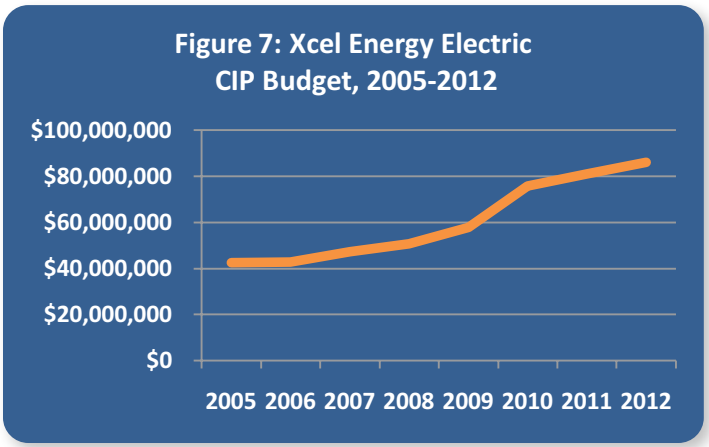
Utilities waste money on energy efficiency programs that are not cost effective. If these rising CIP budgets were funding a sound program, then the extra expense might not be a problem. Unfortunately, Minnesota's CIP is not sound. It allows utilities to waste large sums of money on programs that are not cost effective. This is shown by the dramatic variation in the cost of achieving energy savings and CO2 reductions among Minnesota's utilities. After throwing out the rather extreme cases, the cost to save energy ranges from about $0.05/kWh to $0.72/kWh.[59] It's absurdly wasteful to pay $0.72/kWh—or even $0.30/kWh—to conserve energy that costs about $0.08/kWh to generate. (See Appendix D for a complete list of utility energy savings, CO2 reductions and program costs for 2008.)

In addition to the RES and the CIP, other green energy laws substantially affect energy prices, but they are more difficult to document. Altogether, the preceding evidence shows that Minnesota's green energy laws are raising the price of energy in Minnesota. Most of this evidence links rising energy prices to Minnesota's RES and CIP. These are clearly two of the major cost drivers, but they are not necessarily the only ones. Due to reporting requirements on utilities, they are just the easiest to document.









Sources: Utility Conservation Improvement Program compliance filings before the Minnesota Public Utilities Commission; and Office of Energy Security Decisions on utility Triennial Conservation Improvement Program Plans.

In coming years, Minnesota's ban on the production or importation of electricity from new carbon-emitting power plants may have an even more substantial impact on energy prices. However, the impact of this ban will be much more difficult to document because it will require speculating on how utilities might have acted absent the ban.

Many other green energy laws are difficult to document because they impose only small requirements with, admittedly, only small impacts on the price of energy. Due to their size, it's very difficult to measure how they affect the overall price of energy. But that does not diminish how important it is to understand how these smaller requirements affect the price of energy. In aggregate, their impact can be substantial. Moreover, these other laws are often the most difficult to justify on a cost-to-benefit basis.

Understanding that Minnesota's green energy policies are already making energy less affordable, the final part of this report offers recommendations to rebalance Minnesota's energy policy on the state's need for affordable and competitive energy rates.

Part V. Recommendations

The following recommendations reintroduce energy affordability as a key priority. Most of these recommendations offer straightforward repeals of the most costly and unjustifiable green energy policies. Repealing certain policies will be politically difficult in the short term. Therefore, short of repeal, this report also recommends additional policy options to mitigate the harm caused by Minnesota's green energy policies.

To understand the need to redirect energy policy, it's important to remember that Minnesota lawmakers never fully discussed or contemplated the substantial harm that could arise from the green energy mandates they passed in 2007.[60] Indeed, lawmakers certainly never contemplated the recent tectonic shifts in the economy when they passed the Next Generation Energy Act. What might have made sense to many in 2007 does not fit today's economic circumstances. Therefore, it's time to revisit Minnesota's green energy policies; it's time to make energy affordability a higher priority. Minnesota can do so without compromising a clean environment.

"Lawmakers certainly never contemplated the recent tectonic shifts in the economy when they passed the Next Generation Energy Act. What might have made sense to many in 2007 does not fit today's economic circumstances."

(1) Renewable Energy Standard

Recommendation One: Repeal the Renewable Energy Standard (RES) mandate.

This report previously outlined a number of cost drivers associated with Minnesota's RES and offered compelling evidence that the RES is already raising electricity prices in Minnesota. To maintain competitive electricity prices, the legislature should repeal the RES mandate.

Importantly, repealing the RES would not mean that Minnesota would abandon renewable energy. Minnesota's neighbors show that an RES mandate is not necessary to developing renewable energy. Even without an aggressive mandate, Iowa, North Dakota, and South Dakota generate a significant percentage of electricity from wind.[61] Instead of halting the development of renewable energy, repealing the RES would simply guarantee that Minnesota utilities pursue wind and other

renewables for sound economic reasons, as well as green reasons.

Recommendation Two: Absent a repeal of the RES, amend it to mitigate its adverse impacts on electricity prices and system reliability.

Despite being the best policy option, repealing the RES may not be politically feasible in the near term. Therefore, the legislature should also consider options that mitigate the risk that the RES will raise electricity prices in the future.

- ***Option 1: Automatically exempt utilities from the RES when renewable energy is not cost competitive with certain intermediate-load alternatives.*** To ensure that renewable energy is cost competitive, utilities should be exempt from the RES if adding renewable energy is not cost competitive with intermediate-load alternatives, such as natural gas. This should be an automatic exemption issued after an annual compliance review. Currently, the PUC is given too much discretion over when a utility should be exempt from the RES.

- ***Option 2: Adjust a utility's RES based on its ability to add cost-effective renewable technologies.*** The goal for every utility in Minnesota to meet the same renewable standard is impractical and fails to appreciate substantial differences across Minnesota's utilities. Maybe the most disturbing news about the RES is that it has led some utilities to add renewable energy when they already had adequate energy sources to meet their demand. Obviously, each utility is in a different position when it comes to customer demand and their ability to meet that demand through existing energy contracts and facilities. There are also variations in access to capital and transmission. Furthermore, some utilities have access to federal tax credits while others don't. If Minnesota continues to mandate an RES, it must recognize these differences and adjust the RES to fit each utility's unique circumstances.

- ***Option 3: Transition the RES into a low carbon/alternative energy standard.*** If the object of Minnesota's RES is to reduce carbon emissions, then the energy technologies that qualify to meet the standard should be based on carbon emissions, not their renewable traits. The legislature should, therefore, change the renewable energy standard to a low carbon/alternative energy standard that includes energy technologies like large hydroelectric plants, high-efficiency coal and nuclear power plants in addition to wind and more conventional renewables. Demand-side management and energy efficiency should also qualify as alternative energy sources to fulfill the new low-carbon/alternative energy standard.

Recommendation Three: Require utilities to report regularly on the net impact of wind energy across their entire systems, including impacts on electricity rates, baseload power plants and system reliability.

Though there were preliminary studies that investigated the feasibility of integrating wind, there does not appear to be a coordinated effort to study and document the actual impact of integrating wind into the electricity grid. Wind is by no means a perfect energy solution, and RES compliance reports highlight a number of possible issues related to cost and system reliability. In particular, integrating wind can negatively affect the transmission grid and the operation of baseload power plants.[62] Wind can also strain the wholesale electricity market by creating huge surpluses in supply when the wind really gets blowing during off-peak hours. To track these and other possible issues, the legislature should require utilities to report regularly on the net impact of integrating wind.

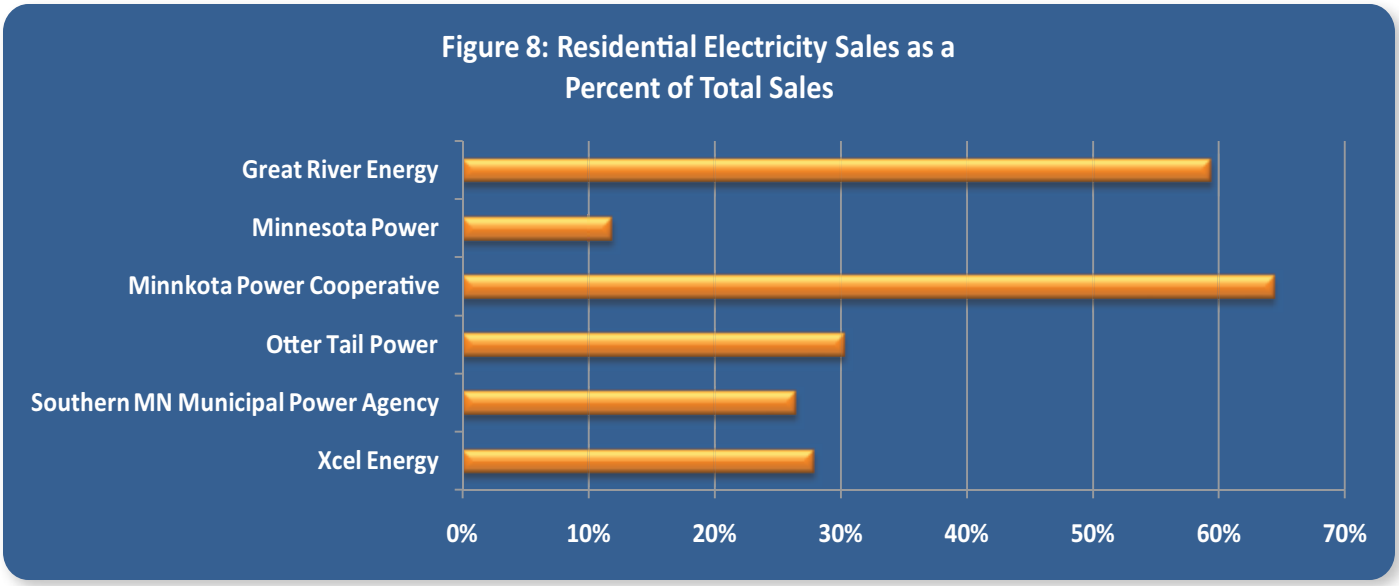
(II) The Conservation Improvement Program

Recommendation Four: Eliminate the Conservation Improvement Program (CIP)'s minimum spending requirement and energy savings goals and, instead, regulate energy efficiency and demand-side management exclusively through the integrated resource planning process.

For nearly two decades, Minnesota law has required utilities to spend, at a minimum, a fixed percentage of their revenue on energy conservation. By its very nature, the minimum spending requirement (MSR) is arbitrary. In addition to the MSR, the Next Generation Energy Act of 2007 requires utilities to work toward energy saving goals. These energy saving goals are even more arbitrary than the MSR. It's one thing to require utilities to spend the same amount of revenue; it's quite another to expect the same energy-saving results.

Because they are arbitrarily fixed, the MSR and energy-savings goal fail to accommodate adequately for swings in the economy that affect the need for energy efficiency programs and their cost effectiveness. When the economy weakens, the CIP becomes a much more expensive proposition. Under a strong economy with increasing demand for energy, the CIP largely replaces the need for new generation. Thus, the price of saving energy is compared to the marginal price of adding new and generally more expensive generation and transmission. In contrast, under a weak economy with lower demand, the CIP tends to only offset the marginal cost of fuel consumed at existing generation plants. In this scenario utilities are investing in a CIP to replace existing investments. This can be quite expensive. Utilities must still, of course, recover the capital they have invested in their existing generation and transmission. To do so, they must raise rates.

On top of not accommodating economic swings, the MSR and energy savings goal do not adequately account for differences across utilities that limit or enhance a particular utility's ability to meet the standards in a cost-effective way. A utility's ability to implement cost-effective energy efficiency programs is largely influenced by its size, customer base, and generation capacity. The utilities that pay the highest prices to save energy tend to be smaller municipal utilities. Further, it costs substantially more to save energy for residential customers and, therefore, the CIP will be more costly for utilities with a larger proportion of residential customers.[63] Figure 8 shows that the proportion of residential



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

customers varies widely across utilities. Finally, the CIP may not be a prudent investment for utilities with plenty of generation capacity to meet long-term demand compared to utilities that can make better use of their CIP spending by deferring the need to build out expensive new generation.

Most utilities are already spending well above their MSR to meet their energy savings goal. Thus, for most utilities, the energy savings goal has effectively replaced the MSR with a higher spending requirement, which poses a higher risk to future electricity prices.

The OES is empowered to lower a utility's energy savings goal to as low as one percent "based on its historical conservation investment experience, customer class makeup, load growth, a conservation potential study, or other factors the [OES] determines warrants an adjustment." If applied, this certainly mitigates the problems just discussed. Recently, regulators did approve lower savings goals for Xcel Energy and Otter Tail Power. However, nothing requires the OES to make this adjustment in the future.

Because the ability to achieve energy savings varies across utilities, utilities should not be held to the same MSR or the same energy savings goal. Furthermore, the CIP should flex with swings in the economy. To guarantee a fair and cost-effective CIP, the MSR and the savings goal should be eliminated.

Minnesota already has a process in place that promotes energy efficiency and demand-side management through a utility's integrated resource plan (IRP). The IRP is a utility long-term planning document filed with the PUC that identifies the ideal mix of generating resources. Currently, the IRP works in tandem with the MSR and the savings goal. Upon eliminating the MSR and savings goal, the IRP would simply take over. Importantly, the IRP assesses each utility separately and assesses a utility on a regular enough basis to account for swings in the economy. Moving forward, the IRP will continue to promote a strong CIP without an MSR or savings goal.

Recommendation Five: As an alternative to eliminating the MSR and the energy savings goal, amend Minnesota's energy conservation requirements to be more flexible.

Eliminating the energy efficiency spending requirement will likely run into similar political roadblocks as repealing the RES. If eliminating the MSR and energy savings goal is not feasible, then lawmakers should adopt the following four-part strategy to make them more flexible.

- ***First, require the OES to adjust the MSR and energy savings goals to account for the higher cost of residential efficiency programs.***

- ***Second, require the OES to adjust the MSR and energy savings goals based on a utility's size.***

- ***Third, require the OES to adjust the MSR and energy savings goals to account for differences between utilities in their need for new generation.***

- ***Fourth, enable small municipalities to aggregate their spending into a jointly administered CIP.*** The cost-effectiveness of municipal utility electric CIPs vary widely. Throw out the most extreme values and the cost effectiveness of their CIPs ranged from $0.045/kWh to $0.918/kWh in 2008. The least cost-effective utilities tend to be the smallest, which suggests that these programs benefit from economies of scale. To make Minnesota's municipal CIPs more cost effective, smaller municipalities should aggregate their energy efficiency spending into one CIP that can provide economies of scale.

Table 1: Minnesota is not reducing electricity consumption relative to other states (A higher rank represents less energy consumption per customer)		
	Minnesota Residential Electricity Consumption Per Customer, State Rank	Minnesota Commercial and Industrial Electricity Consumption Per Customer, State Rank
1990	19	32
2000	19	42
2009	19	43

Source: Author's calculations based on Energy Information Agency, Electric Power Annual 2009-State Data Tables (Nov. 23, 2010).

Recommendation Six: Give primary consideration to total resource use and the ratepayer impact when evaluating the cost effectiveness of energy efficiency programs.

Minnesota law directs regulators to assess the cost effectiveness of energy conservation programs based on "the costs and benefits to ratepayers, the utility, participants, and society." State law reflects the general practice to assess the costs and benefits from different perspectives. However, as implemented, the cost-benefit analysis suffers from two problems.

First, the analysis can exaggerate the benefits because some of the benefits in the equation are highly speculative. The analysis considers the societal perspective, which is a variant of the total resource cost (TRC) test. The TRC test measures the impact on total energy efficiency. More precisely, it measures the total cost of the program to both the utility and the ratepayer in comparison to the benefit of avoiding the production of energy. To assess the overall impact on society, the societal perspective starts with the TRC and then adds environmental and non-environmental externalities to the equation. The problem with the societal perspective is that these externalities are highly speculative and, as such, often exaggerate the benefits of energy efficiency programs.[64] Furthermore, considering these nonresource-based externalities distracts from the CIP's primary focus on resource efficiency.[65]

Second, Minnesota regulators, in practice, evaluate CIPs solely from the societal perspective. The societal perspective was never intended to be considered alone.[66] Doing so ignores the cost and benefit to ratepayers and, as a result, programs that raise electricity rates gain easy approval.[67]

The end result of these problems is that the cost-benefit analysis is quite lenient and fails to focus the CIP on the most cost-effective programs. This is shown by the fact that the cost-effectiveness of energy efficiency programs varies widely. For instance, Xcel's Home Electric Savings Program costs $1.21/kWh saved while their Refrigerator Recycling Program costs $0.17/kWh saved. This variance shows that utilities are not limiting their spending to the most cost-effective programs. To keep the CIP cost-effective, the societal test should be replaced by the total resource cost test and equal consideration should be given to the impact on ratepayers.

Recommendation Seven: Audit the CIP's actual costs and energy savings.

Minnesota has long been considered a leader in supporting energy efficiency programs. According to the American Council for an Energy Efficient Economy, Minnesota utilities delivered the sixth highest electricity savings as a percent of total electricity sales in 2008.[68] As a lead state, Minnesota electricity customers should be reporting declining energy use in comparison to other states. However, Table 1 suggests that Minnesotans are not using less energy by comparison. Minnesota's ranking for electricity sales per residential customer has remained unchanged since 1990. Minnesota's ranking for commercial and industrial sales per customer actually fell from 32 in 1990 to 43 in 2009. This data begs the question: Is Minnesota's CIP actually saving energy?

It's certainly possible that Minnesota is overestimating energy savings. Not every utility accounts for the free riders in their programs. Free riders are program participants who take financial incentives when they would have spent their own money anyway. Also, no one seems to be accounting for the rebound effect, the fact that energy efficiency can encourage people to use more energy. For instance, an individual with a new energy-efficient air conditioner may choose to bask in its coolness longer, knowing it is using less energy.

Maybe there's a good explanation for why Minnesota electricity sales have not declined relative to other states. Nonetheless, something is not adding up.

The only thorough audit of the CIP was done in 2005 by the Minnesota Office of the Legislative Auditor.[69] Unfortunately, the audit substantially relied on the analysis of two organizations with heavy biases toward energy efficiency programs.[70] For an accurate and impartial assessment of the CIP, the state should contract with a private accounting firm to study whether the CIP has truly increased energy efficiency in Minnesota.

(III) Restrictions on Baseload Power

Recommendation Eight: Repeal the ban on the production or importation of electricity from new carbon-emitting power plants.

As passed by the Next Generation Energy Act, Minn. Stat. § 216H.03 restricts the construction of a new large energy facility that would increase the power sector's carbon dioxide emissions. It also restricts the importation of energy from a new large energy facility in another state that would increase the power sector's carbon dioxide emissions. The major problem with this law is that Minnesota will need new baseload power in the future—the sort of continuous power necessary for a reliable electricity grid—and new baseload power is almost always supplied by electric generating plants that emit CO2. Ironically, the NGEA required a study on the state's long-term resource needs, which found that the state will likely need another 4,139 MW of baseload power from fossil fuel sources that are restricted by the NGEA.[71]

These restrictions present other problems as well. The restriction on importing electricity almost certainly violates the Commerce Clause of the federal Constitution. States are generally restricted from regulating interstate commerce and electricity transmission is no exception. On top of being unconstitutional, these restrictions ban Minnesota electricity customers from buying low-cost electricity. Furthermore, the blanket restriction risks future harm to the environment by discouraging investments in clean coal technologies and by encouraging older coal plants with higher emissions to continue operation well beyond their planned lifespans.

In light of disruptions to the supply of baseload power, constitutional violations, affordability concerns and possible environmental harms, these restrictions are unsupportable and should be repealed.

"The restriction on importing electricity almost certainly violates the Commerce Clause of the federal Constitution. States are generally restricted from regulating interstate commerce and electricity transmission is no exception."

Recommendation Nine: Repeal the moratorium on nuclear power plants.

Minnesota is one of four states that ban the construction of a new nuclear power plant without prior authorization through legislation or

a statewide referendum. Minn. Stat. § 216B.243 restricts the PUC from issuing a certificate of need for a nuclear power plant. Eight other states prohibit the construction of a new nuclear facility until the federal government establishes a waste repository. The rationale for these bans is rooted in environmental protection concerns. As such, they represent one of the rare instances where concerns over environmental protection conflict with concerns over carbon emissions. Nuclear facilities have proven to be environmentally safe for decades. Though nuclear energy may not prove to be a least-cost energy option in the future, utilities should be free to consider nuclear energy as a low-carbon option. Thus, the nuclear moratorium should be lifted.

(IV) Transparency and Accountability

Recommendation Ten: Require utilities to report regularly on the rate impact of the renewable energy standard, the conservation improvement program, and restrictions on building new generation.

In spite of the expectation that energy costs will rise due to green energy policies and the recent evidence that costs are indeed rising as a result of the Minnesota's energy mandates and regulations, no one is bothering to measure this cost and its overall impact on ratepayers. Obviously this information would be useful. Policymakers require this information to make sound decisions in the future. Consumers deserve this information to know why their energy bills are increasing. Finally, and most importantly, regulators need this information to know whether to modify or delay green energy regulations.

Unfortunately, information on how green energy policies affect consumer rates is fragmented across a number of different regulatory proceedings, and there is no established framework to bring this information together in a way that's useful to policy makers, consumers, and regulators. For this report, information on rate impacts drew from rate cases, resource plans, certificate of need applications, and CIP and renewable energy rider approval requests. While all of these proceedings offer useful information, none of them adequately draw it all together to provide an accurate measure of the effect that green energy policies are having on energy prices.

"In spite of the expectation that energy costs will rise due to green energy policies and the recent evidence that costs are indeed rising as a result of the Minnesota's energy mandates and regulations, no one is bothering to measure this cost and its overall impact on ratepayers."

The lack of accounting is especially surprising in regards to the RES. The PUC is required by statute to "modify or delay the implementation" of the RES if it "determines it is in the public interest to do so." Under the statute, the first factor that the PUC "must consider" is "the impact of implementing the standard on its customers' utility costs, including economic and competitive pressure on the utility's customers." To abide by this mandate to modify or delay the RES, the PUC must know the rate impact of implementing the RES. But the PUC does not actively measure this. In fact, the PUC recently decided against implementing a well-defined framework to measure the rate impact of implementing the RES.[72]

To ensure that policymakers, consumers, and regulators have actionable information, a framework should be established for utilities to report the rate impact of Minnesota's green energy policies. At a minimum, utilities should report the rate impact

of the RES, CIP, and restrictions on building and importing new generation.

Recommendation Eleven: Require utilities to disclose the cost of green energy policies on ratepayer bills.

Once utilities begin measuring the rate impact of green energy policies, they should be required to report the rate impact on consumer bills. Utilities do report certain green energy-related surcharges on customer bills, such as the CIP Rider and the Renewable Energy Rider. However, these surcharges don't account for the full cost, which can be misleading. Surcharges are generally mechanisms for utilities to recover costs that are hard to predict. When costs become predictable, utilities wrap the cost into their base rate. As a result, predictable green energy costs disappear into the base rate, and unpredictable costs stay labeled as riders. For instance, transmission costs to connect wind energy to the grid are predictable, while wind energy costs related to operations and maintenance are unpredictable. Obviously, this creates confusion. A customer reviewing their bill is likely to conclude that the rider represents the full cost. To cure this confusion, the full cost of each green energy policy should be printed on a customer's bill.

Recommendation Twelve: Require a triennial report that analyzes the unintended consequences of Minnesota's green energy policies. Nearly every green energy policy results in unintended consequences that can limit and even eviscerate its benefits. For instance, Minnesota's renewable energy mandate reduces the efficiency of certain coal and natural gas power plants by requiring them to cycle on and off to compensate for the intermittency of wind. Various green energy policies risk shifting the use of coal, natural gas, and oil from highly efficient facilities in North America to less efficient facilities in other countries. By limiting the use of coal in Minnesota, coal mines in the Western United States will find other markets for their coal. These new markets will almost certainly have less efficient coal plants. Similarly, policies that reduce the importation of oil from Canada—such as ethanol mandates and a low-carbon fuel standard—shift the use of Canadian oil to less efficient users, such as oil-thirsty China. Furthermore, restricting the use of carbon-based fuels in Minnesota diminishes the incentive to develop the technologies that will increase efficiency. To better understand the dimensions of these unintended consequences, Minnesota should contract with a private accounting firm to analyze them every three years.

> **"When Minnesota's statutes are read as a whole, they generally direct regulators to balance their regulatory decisions in favor of energy reliability and affordability."**

Recommendation Thirteen: Instruct regulators that their primary purpose is to ensure that retail consumers of energy receive adequate and reliable services at reasonable and competitive rates.

According to Minn. Stat. § 216B.01, the public interest in regulating public utilities is "to provide the retail consumers of natural gas and electric service in this state with adequate and reliable services at reasonable rates." Notably, these legislative findings do not mention a public interest in environmental protection, sustainability, renewable energy, energy conservation, or anything else related to green energy. However, elsewhere in statute, the legislature has clearly directed regulators to implement green energy policies that risk increasing energy prices and straining system reliability. There is an obvious conflict here.

How should regulators balance their mission to ensure reliable energy services at reasonable rates with their duty to implement Minnesota's green energy regulations?

When Minnesota's statutes are read as a whole, they generally direct regulators to balance their regulatory decisions in favor of energy reliability and affordability. As already noted, the public interest in regulating utilities is defined entirely in terms of ensuring reliable service at reasonable rates. Thus, ensuring reliable service at reasonable rates remains job one. State law does, in many cases, direct regulators to show preference for renewable energy and energy efficiency. However, nearly every major green energy policy directs regulators to adjust the policy if it harms reliability or affordability. Furthermore, regulators are usually limited to promoting "cost-effective" green energy policies.

Nonetheless, regulators often elevate green energy values above affordability. For instance, the Public Utilities Commission regularly exempts wind energy proposals from rules that require a cost comparison to different energy sources. Thus, the cost of wind is not compared to the cost of non-renewable energy sources. For another example, the Office of Energy Security (OES) approved Xcel's Solar Rewards program, even though it failed every cost-benefit analysis. The OES justified the program based on a vague guess that it would create green jobs.

Regulators must be reminded that their first job is to ensure reliable service at reasonable rates. Furthermore, regulators should be specifically instructed to promote competitive rates. This is especially important in light of the growing disparity in rates between Minnesota and neighboring states. Therefore, lawmakers should instruct regulators that their primary purpose is to ensure that retail consumers of energy receive adequate and reliable services at reasonable and competive rates. ■

Endnotes

1 Fisher Sheehan and Colton set affordability at 6 percent of income. For 2009, Minnesota ranked 44th based on the amount that home energy bills exceeded affordable home energy bills for households below 185 percent of federal poverty guidelines. Also, Minnesota ranked 43rd based on the energy burden on households below 50 percent of the federal poverty level. By this measure of affordability Minnesota households below 50 percent of the federal poverty line on average devote 70.3 percent of income to energy. Fisher Sheehan and Colton, Summary Information and State Rankings (April 2010), available at http://www.homeenergyaffordabilitygap.com/04_Current_Summaries2.html. The American Coalition for Clean Coal Electricity takes a similar approach in their most recent report on energy affordability and arrives at a similar number—69.3 percent of after-tax income is spent on energy in households with gross annual incomes lower than $10,000. Eugene M. Trisko, *Energy Cost Burdens on American Families* (American Coalition for Clean Coal Electricity, February 2010), available at http://www.americaspower.org/sites/all/themes/americaspower/images/pdf/Energy-Cost-Burdens-on-American-Families.pdf. These numbers are likely correct, but they exaggerate the burden because they measure energy expenditures as percent of income, not total household spending. Because most low-income families receive state and federal assistance, the average low-income household actually spends far more than they make. For instance, households with incomes between $5,000 and $9,999 on average spend about $18,000.

2 Moody's Economy.com, *North American Business Cost Review, 2008 Edition* (July 2008); Milkin Institute, 2007 Cost-of-Doing-Business Index (Aug. 16, 2007), available at http://www.milkeninstitute.org/publications/publications.taf?cat=indexes&function=detail&ID=29&type=CDB.

3 The importance of energy costs, of course, varies by business and industry. According to the Nation Federation of Independent Business (NFIB) Energy Consumption Poll, "one in 10 (10%) small-business owners claim that energy is their single greatest cost," and "25 percent claim energy is one of the two or three largest business costs they have." National Federation of Independent Business, *National Small Business Poll: Energy Consumption*, Vol. 6, Iss. 3 (2006), available at http://www.411sbfacts.com/files/EnergyConsumption[1].pdf. In Minnesota, energy adds a particularly large cost to food processing (especially corn refining), paper production, mining, metal casting, biotechnology, oil refining, ethanol distilling, and retailing.

4 Bruce D. Phillips and Holly Wade, *Small Business Problems & Priorities* (National Federation of Independent Business, June 2008), available at http://www.nfib.com/Portals/0/ProblemsAndPriorities08.pdf.

5 The parable of the broken window was first used by Frederic Bastiat in his famous 1850 essay, *What is Seen and What is Not Seen*, available at http://www.econlib.org/library/Bastiat/basEss1.html. Kenneth Green, Resident Scholar with the

American Enterprise Institute first applied Bastiat's broken window fallacy to green jobs in an essay in *The American*. *See* Kenneth P. Green, "Why Obama's 'Green Jobs' Plan Won't Work, *The American*, November 7, 2008, available at http://www.american.com/archive/2008/november-11-08/why-obama2019s-2018green-jobs2019-plan-won2019t-work.

6 That is not to say that green jobs cannot have a positive impact on Minnesota's economy. A natural movement towards a more green economy is now underway based on changing consumer preferences, rising fossil fuel prices, and national interests favoring domestic energy sources, such as wind. The point is, attempts by Minnesota lawmakers to shove the green economy beyond this natural movement will result in wasteful green investments and job losses elsewhere.

7 Gabriel Calzada Álvarez, *Study of the Effects on Employment of Public Aid to Renewable Energy Sources* (Universidad Rey Juan Carlos, March 2009), available at http://www.juandemariana.org/pdf/090327-employment-public-aid-renewable.pdf. The National Renewable Energy Laboratory (NREL), a laboratory of the U.S. Department of Energy, issued a critical response to this report. Eric Lantz and Suzanne Tegen, *NREL Response to the Report Study of the Effects on Employment of Public Aid to Renewable Energy Sources from King Juan Carlos University (Spain)* (National Renewable Energy Laboratory August 2009), available at http://www.nrel.gov/docs/fy09osti/46261.pdf. This response, however, has been heavily criticized as being influenced by the wind industry and other renewable energy advocates like the Union of Concerned Scientists and the Center for American Progress. *See* Juliet Eilperin, "Wind industry influenced DOE report," *The Washington Post*, March 3, 2010, available at http://views.washingtonpost.com/climate-change/post-carbon/2010/03/wind_industry_influenced_doe_report.html. For a rebuttal to the NREL response, *see* Institute for Energy Research, *The NREL's Flawed White Paper on the Spanish Green Jobs Study* (Sept. 3, 2009), at http://www.instituteforenergyresearch.org/2009/09/03/the-nrels-flawed-white-paper-on-the-spanish-green-jobs-study/.

8 Henrik Meyer, "Wind Energy's Effects on Employment in Denmark," in *Wind Energy: The Case of Denmark* (Center for Political Studies, September 2009), available at http://www.cepos.dk/fileadmin/user_upload/Arkiv/PDF/Wind_energy_-_the_case_of_Denmark.pdf.

9 Manuel Frondel, Nolan Ritter, Christoph M. Schmidt, and Colin Vance, *Economic Impacts from the Promotion of Renewable Energy Technologies: The German Experience* (Rheinisch-Westfälisches Institut für Wirtschaftsforschung, October 2009), available at http://repec.rwi-essen.de/files/REP_09_156.pdf.

10 For a critique of studies that promote green jobs, see Robert Michaels & Robert Murphy, *Green Jobs: Fact or Fiction? An Assessment of the Literature* (Institute for Energy Research, January 2009) , available at http://www.instituteforenergyresearch.org/green-jobs-fact-or-fiction/; and David G. Tuerck, Benjamin Powell, and Paul Bachman, *"Green Collar" Job Creation: A Critical Analysis* (The Beacon Hill Institute, June 2009), available at http://www.beaconhill.org/BHIStudies/GreenJobs09/BHIGreen_Collar_Job_Critique090625.pdf.

11 For further discussion on the theoretical problems with green jobs, *see* Andrew P. Morriss, William T. Bogart, Andrew Dorchak, and Roger E. Meiners, *7 Myths about Green Jobs* (University of Illinois Law & Economics Research Paper No. LE09-007, Case Legal Studies Research Paper No. 09-14, March 11, 2009), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1357440.

12 Moody's Economy.com, *North American Business Cost Review, 2008 Edition* (July 2008); Milkin Institute, 2007 Cost-of-Doing-Business Index (Aug. 16, 2007), available at http://www.milkeninstitute.org/publications/publications.taf?cat=indexes&function=detail&ID=29&type=CDB. One reason Minnesota ranks lower on the Moody's index is because they give more weight to Minnesota's lower energy costs, the only factor where Minnesota holds a cost advantage.

13 For this comparison, Midwest includes Illinois, Indiana, Iowa, Michigan, Missouri, North Dakota, Ohio, South Dakota, and Wisconsin. This represents a substantial change from the 2003 index when the Twin Cities ranked 79th overall, a lower ranking than Chicago, Cleveland, and Detroit.

14 That is not to say that every Minnesota environmental protection law is justified. Some of Minnesota's environmental protection laws may not even come close to passing a cost-benefit analysis and, as such, deserve to be reconsidered. This report leaves these questions and issues for another day.

15 It's also worth noting that green energy can, at times, be in tension with environmental protection. For instance, there are often tensions between conserving land and using that land for biofuels, solar arrays, windmills or hydro power.

16 National Research Council of the National Academies, *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use* (2010), p. 305. To explain this uncertainty, the study explains the substantial differences between reducing specific pollutants (environmental protection) and reducing carbon emissions (green energy promotion).

> [A] major difference between quantifying the local air pollution effects of fossil fuels and the impacts of GHG emissions is that the two differ significantly in their time dimension, their spatial scale, the variety of impacts, and, hence, in the certainty with which they can be estimated. Id. at p. 258.

Indeed, carbon emissions must be considered over a longer timeframe because they can stay in the atmosphere for a century or more. Effects must also be measured on a global scale. It's much easier to estimate a localized impact, say the impact of mercury emissions on a lake or a watershed. There is also a larger number of health, agricultural, economic, political, and ecological effects (both positive and negative) to consider. Furthermore, it's very difficult to predict the economic, political, and technological changes that will shape

the world's ability to adapt to climate change.

17 Id. at p. 249.

18 Id.

19 Note that the federal government does estimate the social cost of carbon. Under Executive Order 12866, federal agencies must make their best effort to estimate the cost and benefits of regulations aimed at reducing carbon emissions, such as fuel efficiency standards. The latest estimate identifies a range of three likely values for the social cost of carbon in dollars per metric ton of carbon dioxide. These best-effort estimates are $4.70, $21.40, and $35.10. Interagency Working Group on Social Cost of Carbon, United States Government, *Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866* (February 2010), available at http://www.epa.gov/oms/climate/regulations/scc-tsd.pdf. However, nearly every page of the federal analysis includes a caveat on the uncertainty and limitations of any estimate. Therefore, it's hard to understand just what these estimates mean. Indeed, it's important to recognize that federal agencies were mandated to make a best-effort estimate. The fact that the National Research Council, when given a choice, declined to set a value suggests that the federal agency values are not real meaningful.

20 Minn. Stat. § 216H.03, available at https://www.revisor.mn.gov/statutes/?id=216H.03. This statute does allow for the constuction of new power plants that were under consideration by the Minnesota Public Utilities Commission prior to April 1, 2007.

21 States that are members of the Regional Greenhouse Gas Initiative have agreed to cap their carbon emissions. An argument can be made that this cap is more onerous than Minnesota's ban on new emissions, but only two states in this agreement (Delaware and Maryland) rely to a substantial degree on coal for their electricity.

22 Minn. Stat. § 216B.1691, available at https://www.revisor.mn.gov/statutes/?id=216B.1691.

23 The PUC recently issued an order clarifying how they will apply the statutory requirement to modify or delay the Renewable Energy Standard. *In the Matter of Detailing Criteria and Standards for Measuring an Electric Utility's Good Faith Efforts in Meeting the Renewable Energy Objectives Under Minn. Stat. § 216B.1691*, Order Clarifying Criteria and Standards for Determining Compliance Under Minn. Stat. § 216B.1691, Minnesota Public Utilities Commission, Docket No. E-999/CI-03-869 (Mar. 19, 2010).

24 Colo. Stat. § 40-2-124(g)(I)(A); and 20 Ill. Comp. Stat. § 3855/1-75(c)(2)(E).

25 *See* New York State Public Service Commission, 03-E-0188: Renewable Portfolio Standard - Home Page, at http://www3.dps.state.ny.us/W/PSCWeb.nsf/All/1008ED2F934294AE85257687006F38BD?OpenDocument (explaining that funding is limited by the amount collected through the Renewable Portfolio Standard Surcharge); California Public Utilities Commission, RPS Cost Containment, at http://www.cpuc.ca.gov/PUC/energy/Renewables/SB1036implementation.htm; and Julie Fitch, California's Renewables Portfolio Standard: Implementing one of the most ambitious renewable energy standards in the country (California Public Utilities Commission, Mar. 25, 2009), available at ftp://ftp.cpuc.ca.gov/OGA/2010%20position%20letters/presentations/Assembly%20Hearing_%20Cost%20Containment_3%2025%2009%20-%20jf2q.pdf Note that California's utilities have already reached their cost cap. California Public Utilities Commission, Energy Division Resolution E-4253 (Sept. 24, 2009), available at http://docs.cpuc.ca.gov/PUBLISHED/FINAL_RESOLUTION/107770.htm; California Public Utilities Commission, Energy Division Resolution E-4356 (Sept. 2, 2010), available at http://docs.cpuc.ca.gov/PUBLISHED/FINAL_RESOLUTION/123111.htm.

26 Minn. Stat. § 216B.241, available at https://www.revisor.mn.gov/statutes/?id=216B.241.

27 The Regulatory Assistance Project, Midwest Policy Grid Through 2009 (November 2010), available at http://www.raponline.org/Feature.asp?select=116.

28 News Release, American Council for an Energy-Efficient Economy, "Reaching the Tipping Point: Majority of States Have Now Adopted Energy Efficiency Resource Standards," Dec 21, 2010, available at http://www.aceee.org/press/2010/12/reaching-tipping-point-majority-states-have-now-adopted-; and American Council for an Energy-Efficient Economy, State Energy Efficiency Resource Standard (EERS) Activity (August 2010), available at http://www.aceee.org/files/pdf/State%20EERS%20Summary%20Aug%202010.pdf.

29 American Council for an Energy-Efficient Economy, *Key Findings from ACEEE's 2010 State Energy Efficiency Scorecard* (Oct. 13, 2010), available at http://www.aceee.org/fact-sheet/key-findings-aceees-2010-state-energy-efficiency-scorecard.

30 Minn. Stat. § 216B.1612, available at https://www.revisor.mn.gov/statutes/?id=216B.1612.

31 Minn. Stat. § 239.791, available at https://www.revisor.mn.gov/statutes/?id=239.791.

32 Pew Center on Global Climate Change, *Mandates and Incentives Promoting Biofuels* (Sept. 24, 2010), available at http://www.pewclimate.org/what_s_being_done/in_the_states/map_ethanol.cfm.

33 National Agricultural Statistics Service, United States Department of Agriculture, *Agricultural Statistics, 2009*, available at http://www.nass.usda.gov/Publications/Ag_Statistics/2009/index.asp.

34 Minn. Stat. § 239.77, available at https://www.revisor.mn.gov/statutes/?id=239.77.

35 American Trucking Associations, *State Biodiesel Mandates* (January 2010), available at http://www.truckline.com/AdvIssues/Energy/RENEWABLE%20DIESEL%20%20BIODIESEL/State%20Biodiesel-Renewable%20Diesel%20Mandates_Updated%20January%202010.pdf.

36 Erin Ailworth, "State suspends mandate for wider use of

biofuels," *Boston Globe*, July 2, 2010, available at http://www.boston.com/business/articles/2010/07/02/mass_suspends_mandate_for_biofuel_use/.

37 Minn. Stat. § 116C.779, available at https://www.revisor.mn.gov/statutes/?id=116C.779 . For a thorough review of the Renewable Development Fund, *see* Minnesota Office of the Legislative Auditor, *Renewable Energy Development Fund Evaluation Report* (October 2010), available at http://www.auditor.leg.state.mn.us/ped/2010/rdf.htm.

38 Midwestern Governors Association, *Midwestern Greenhouse Gas Accord* (2007), available at http://www.midwesterngovernors.org/Publications/Greenhouse%20gas%20accord_Layout%201.pdf.

39 Midwestern Governors Association, *Midwestern Greenhouse Gas Reduction Accord: Final Recommendations of the Advisory Group* (May 2010).

40 Minn. S.F. 3050, 86th Legislature, 2009-2010, available at https://www.revisor.mn.gov/revisor/pages/search_status/status_detail.php?b=Senate&f=SF3050&ssn=0&y=2010.

41 Minn. S.F. 13, 86th Legislature, 2009-2010, available at https://www.revisor.mn.gov/revisor/pages/search_status/status_detail.php?b=Senate&f=SF0013&ssn=0&y=

2009. Note that The Midwestern Greenhouse Gas Reduction Accord resolved to develop a low-carbon fuel standard, but has yet to release any recommendations.

42 Complaint, *Rocky Mountain Farmers Union v. James N. Goldstene*, No. 1:09-cv-02234-LJO-DLB (E.D. Cal. 2009); and Complaint, *National Petrochemical & Refiners Association v. James N. Goldstene*, No. 1:10-CV-00163 LJO DLB (E.D. Cal. 2010). These two cases were consolidated on October 11, 2010. The lead case is now *Rocky Mountain Farmers Union v. James Goldstene*.

43 The Federal Energy Regulatory Commission (FERC) ruled in July 2010 that a portion of California's feed-in tariff violated FERC's exclusive jurisdiction to regulate rates. However, in October, FERC issued a clarification that suggests California could have broader discretion than otherwise thought.

44 Division of Energy Planning, Vermont Department of Public Services, *The Economic Impacts of Vermont Feed in Tariffs* (December 2009), available at http://publicservice.vermont.gov/planning/DPS%20White%20Paper%20Feed%20in%20Tariff.pdf. In a press release, the Vermont Department of Public Service offered this summary of the report:

> The analysis in the whitepaper concluded that the new law will cause Vermont households and employers to pay more for renewable electricity than they would have had to with only nominal gains in long term employment. These outcomes contradict the intention of the legislation – to spur the economy through the creation of "green jobs".

Press Release, Vermont Department of Public Service, "Report: Feed-In Tariff Will Hurt Economy," January 25, 2010, available at http://publicservice.vermont.gov/press/2010/Feed-in-tariff%20press%20release%20012510.pdf.

45 Lee van der Voo, "Feed-in tariff report highlights solar funding gap," *Sustainable Business Oregon*, Dec. 13, 2010, available at http://www.sustainablebusinessoregon.com/articles/2010/12/feed-in-tariff-report-highlights-solar.html; and Staff Report, Public Utility Commission of Oregon, *Oregon Solar Photovoltaic Program Legislative Report Comments and Recommendations* (Dec. 8, 2010) http://www.oregon.gov/PUC/meetings/pmemos/2010/121410/reg2.pdf.

46 Minn. H.F. 3618, 86th Legislative Session, 2009-2010, available at https://www.revisor.mn.gov/revisor/pages/search_status/status_detail.php?b=House&f=HF3618&ssn=0&y=2010 and Minn. H.F. 932, 86th Legislative Session, 2009-2010, available at https://www.revisor.mn.gov/revisor/pages/search_status/status_detail.php?b=House&f=HF0932&ssn=0&y=2009.

47 Minn. H.F. 3415, 86th Legislative Session, 2009-2010, available at https://www.revisor.mn.gov/revisor/pages/search_status/status_detail.php?b=House&f=HF3415&ssn=0&y=2010.

48 Minn. Stat. § 216B.01, available at https://www.revisor.mn.gov/statutes/?id=216B.01.

49 Rates increased by 19 percent for homes that use 750 kWh/month. The average Minnesota home used 802 kWh/month in 2009. Energy Information Administration, *Electric Sales, Revenue, and Price, 2009*, Table 5A. Residential Average Monthly Bill by Census Division, and State, 2009 (November 2010), available http://www.eia.doe.gov/cneaf/electricity/esr/esr_sum.html.

50 Dan Gunderson, "Wind power surplus blamed for spike in rural electricity costs," Minnesota Public Radio, Nov. 23, 2010, at http://minnesota.publicradio.org/display/web/2010/11/23/wind-power-electricity-rates/.

51 *See e.g.*, Arrowhead Electric Cooperative, "New state energy efficiency goal starting in 2010 demands big energy reductions for MN consumers," February 1, 2010, at http://arrowelec.wordpress.com/2010/02/01/new-state-energy-efficiency-goal-starting-in-2010-demands-big-energy-reductions-for-mn-consumers-2/; Bob Bruckbauer, "Power costs: Influencing change at the board level," in 2008 Lake Country Power Annual Report, available at http://www.lakecountrypower.coop/pdf/08annualreport.pdf; Michael Monsrud, "Wholesale power cost makes rate adjustment necessary," *Itasca-Mantrap Cooperative Services NewsLine* (April 2009), available at http://www.itasca-mantrap.com/pdf/april2009.pdf; Michael Monsrud, Rising wholesale power costs," *Itasca-Mantrap Cooperative Services NewsLine* (March 2009), available at http://www.itasca-mantrap.com/pdf/march2009.pdf; Michael Monsrud, "More information on rate change," *Itasca-Mantrap Cooperative Services NewsLine* (March 2008), available at http://www.itasca-mantrap.com/pdf/march2008.pdf; David Saggau, "Great River Energy explains PCA increases," *East Central Energy Co-op Advantage* (Nov.-Dec. 2008), available at

http://www.eastcentralenergy.com/newsletters/novdec08.pdf ; North Star Electric Cooperative Frequently Asked Questions, at http://northstarelectric.coop/FAQ%20for%20Website.htm (accessed on 1/4/2011).

52 Thomas L. Aller, Direct Testimony, *In the Matter of Application of Interstate Power and Light Company for Authority to Increase Rates for Electric Service in Minnesota*, Docket No. E001/GR-10-276, May 7, 2010, p. 13.

53 David J. McMillan, *In the Matter of the Application of Minnesota Power for Authority to Increase Electric Service Rates in Minnesota*, Docket No. E015/GR-09-1151, November 2, 2009, pp. 7-8.

54 Jeffrey C. Robinson, "Overall Revenue Requirement Rate Base Income Statement," Direct Testimony and Schedules, *In the Matter of the Application of Northern States Power Company d/b/a Xcel Energy for Authority to Increase Rates for Electric Utility Service in Minnesota*, Docket No. E002/GR-05-1428, November 2, 2005, pg. 13-14 ("The primary reason for the Company's transmission investment growth is the transmission projects to deliver wind energy from the Buffalo Ridge."); and George E. Tyson, "Financial Integrity, Capital Structure, and Cost of Capital," Direct Testimony and Schedules, *In the Matter of the Application of Northern States Power Company d/b/a Xcel Energy for Authority to Increase Rates for Electric Utility Service in Minnesota*, Docket No. E002/GR-05-1428, November 2, 2005, pg. 2-3 (The Company has had to supplement its generation resource portfolio with power purchased from third parties, some of which meets the State's renewable resource sourcing requirements. The credit rating agencies, and Standard & Poor's ("S&P") in particular, have raised concerns about the level of fixed-charge obligations that accompany power purchase agreements ("PPAs"). S&P specifically adjusts the Company's credit metrics to reflect this additional financial leverage.).

55 Xcel compared its capital expenditure projections with similar utilities and found that Xcel's "relative level of capital expenditures is between 1.75 and 2.50 times the projected investment of the proxy group companies." And, according to Xcel testimony, "the Company's level of capital expenditures is related, in part, to Minnesota's renewable portfolio standard." John J. Reed, "Return on Equity," Direct Testimony and Schedules, *In the Matter of the Application of Northern States Power Company, a Minnesota corporation for Authority to Increase Rates for Electric Service in Minnesota*, MPUC Docket No. E002/GR-08-1065, November 3, 2008, pp. 50-52.

56 While Otter Tail Power does not specifically tie renewable generation to the need for their 2010 rate case, much of their costs are related to lower than expected margins on their wholesale electricity sales, which is at least in part if not primarily due to their recent additions of wind generation. *See* Thomas R. Brause, "Policy," Direct Testimony and Schedules, *In the Matter of the Application of Otter Tail Power Company For Authority to Increase Rates for Electric Utility Service in Minnesota*, MPUC Docket No. E017/GR-10-239, April 2, 2010, pp. 8-10. In Xcel's 2010 rate case, the need for a rate increase is primarily driven by cost increases at their nuclear facilities. However, Minnesota's renewable mandates are tied to increases in transmission costs and energy supply operations & maintenance costs. Ian R. Benson, "Transmission Operation & Maintenance Expense and Investments," Direct Testimony and Schedules, *In the Matter of the Application of Northern States Power Company, a Minnesota corporation for Authority to Increase Rates for Electric Service in Minnesota*, MPUC Docket No. E002/GR-10-971, November 3, 2010, pp. 2, 9; and Pamela K. Graika, "Supply Operations," Direct Testimony and Schedules, *In the Matter of the Application of Northern States Power Company, a Minnesota corporation for Authority to Increase Rates for Electric Service in Minnesota*, MPUC Docket No. E002/GR-10-971, November 3, 2010, pp. 4, 6-7.

57 Rates rose from $0.000717/kWh to $0.001426/kWh in 2010. For 2011, Xcel has requested to raise rates to .003133/kWh for residential customers and to .003145 for commercial customers. *In the Matter of the Petition of Northern States Power, a Minnesota Corporation, for Approval of the 2010 Renewable Energy Standard Cost Recovery Rider and 2009 Renewable Energy Standard Tracker Report*, MPUC Docket No. E-002/M-09-1083, Order Approving 2010 RES Rider and 2009 RES Tracker Report, Establishing 2010 RES Charge, and Requiring Revised Tariff, April 22, 2010; and *In the Matter of the Petition of Northern States Power Company, a Minnesota Corporation, Regarding the 2011 Renewable Energy Standard Rider and 2010 RES Tracker Report*, MPUC Docket No. E-002/M-10-1083, Petition and Compliance Filings, October 5, 2010.

58 Minnesota Chamber of Commerce, *Comments: In the Matter of the Petition of Northern States Power, a Minnesota corporation, Regarding the 2010 Renewable Energy Cost Recovery Rider and 2009 RES Tracker Report*, MPUC Docket No. E-002/M-09-1083, December 2, 2009.

59 Minnesota Office of Energy Security, Minnesota Department of Commerce, *2007-2008 Minnesota Conservation Improvement Program Energy and Carbon Dioxide Savings Report* (Jan. 15, 2010), available at http://www.state.mn.us/mn/externalDocs/Commerce/Minnesota_Conservation_Improvement_Program_CIP_Energy_and_CO2_savi_011910042239_CIP_CO2_Report_2010.pdf.

60 The Renewable Energy Standard, for instance, received scrutiny but its impact on energy prices was never fully considered. An important study was released in 2006 that investigated the integration costs of various wind penetration scenarios under a renewable energy standard, including 15, 20, and 25 percent scenarios. This study focused on the cost of scheduling and operating conventional generating resources to accommodate the intermittency of wind. While the study provided valuable information and did suggest that the integration costs would be less than some expected, it was just one part of the cost equation. The study did not address cost of energy itself or the cost of transmission upgrades. While these issues were not ignored, they were never given adequate

consideration. In addition, no one gave adequate consideration to various long-term risks. The financial viability of wind is tied to a number of long-term trends, including fuel prices, electricity demand fluctuations and federal tax credits.

61 American Wind Energy Association, *2009 U.S. Wind Industry Annual Market Report: Rankings* (May 2010), available at http://www.awea.org/documents/factsheets/Industry_Rankings_Factsheet.pdf.

62 Michael Milligan and Brendan Kirby, *Calculating Wind Integration Costs: Separating Wind Energy Value from Integration Cost Impacts* (National Renewable Energy Laboratory, July 2009), p. 2, available at http://www.nrel.gov/docs/fy09osti/46275.pdf.

63 For instance, efficiency programs that are cost effective to ratepayers represent only 7 percent of the total energy savings in Xcel's residential electric CIP. In contrast, cost-effective programs represent 64 percent of the total energy savings in Xcel's business electric CIP. Not surprisingly, Xcel spends far more on their business segment than their residential segment. Xcel Energy, *2010-2012 CIP Electric and Natural Gas Triennial Plan*, MPUC Docket No. E,G002/CIP-09-198, June 1, 2009.

64 Utilities must speculate on a number of assumptions just as they would with any long-term investment, such as future transmission needs and the future cost of fuel. However, the societal test requires utilities to enter into an even more speculative process than a normal long-term investment. For instance, utilities must speculate on avoided environmental damage, non-energy benefits like water savings or waste reduction, the number of "free riders" using CIP financial aid, and the opportunity cost associated with diverting society's money away from other investments.

In this process, utilities and regulators have made one particularly poor assumption related to free riders. Free riders are participants that take advantage of the CIP's financial aid when they would have made the same energy efficiency investments without it. Incredibly, utilities and regulators assume that the free rider cost is offset by savings from people who are spurred by the CIP to make energy efficiency investments without ever participating in the program. They make this highly speculative assumption with no evidence. As a result of this and other highly speculative assumptions, the results of the societal test must also be considered highly speculative and used with caution when making policy decisions.

65 Robert Norcross, Carol Stemrich, and Jolene Sheil, "Re: Investigation into the Adoption and Achievement of Increased Conservation and Energy Efficiency Goals," Public Service Commission of Wisconsin Memorandum, Sept. 25, 2009, available at http://psc.wi.gov/apps35/ERF_view/viewdoc.aspx?docid=122167 ("Including non-resource economic benefits in [energy efficiency] goal development could add a level of complexity and drive Wisconsin away from its primary target of energy efficiency.").

66 Charles River Associates, *Primer on Demand-Side Management* (Prepared for the World Bank, February 2005), http://siteresources.worldbank.org/INTENERGY/Resources/PrimeronDemand-SideManagement.pdf ("[T]hese tests are not intended to be used individually or in isolation.").

67 Xcel Energy, *2010-2012 CIP Electric and Natural Gas Triennial Plan*, MPUC Docket No. E,G002/CIP-09-198, June 1, 2009.

68 Maggie Molina, et al., *The 2010 State Energy Efficiency Scorecard*, (American Council for an Energy Efficient Economy, October 2010), available at http://www.aceee.org/research-report/e107.

69 Minnesota Office of the Legislative Auditor, *Evaluation Report: Energy Conservation Improvement Program*, Report No. 05-04 (January 2005), available at http://www.state.mn.us/mn/externalDocs/Commerce/Legislative_Auditor_Report_on_CIP_013006014559_CIPAuditorreport.pdf.

70 The audit relied on analysis from the American Council for an Energy-Efficient Economy, a nonprofit organization "dedicated to advancing energy efficiency as a means of promoting economic prosperity, energy security, and environmental protection." Synapse Energy Economics also provided support. Synapse is a consulting firm that provides regular support to Minnesota environmental organizations that intervene in PUC proceedings.

71 Minnesota Office of Energy Security, *Minnesota Resource Assessment Study*, available at http://www.state.mn.us/mn/externalDocs/Commerce/Minnesota_Resource_Assessment_102109022827_MN_Resource_Assessment.pdf; This is in addition to another 4,000 MW from renewable sources.

72 *In the Matter of Detailing Criteria and Standards for Measuring an Electric Utility's Good Faith Efforts in Meeting the Renewable Energy Objectives Under Minn. Stat. § 216B.1691*, Order Clarifying Criteria and Standards for Determining Compliance Under Minn. Stat § 216B.1691, Docket No. E-999/CI-03-869 (Mar. 19, 2010).

Appendix A
State Incentives for Renewable Energy and Energy Efficiency

Tax Incentives

- **Property Tax Incentives:** Minnesota exempts from taxation certain property related to hydroelectric, wind, and solar power. (Minn. Stat. §§ 272.02; 272.028; and 272.029)
- **Solar Energy State Sales Tax Exemption:** Broadly exempts all components of a solar energy system from the state sales tax. (Minn. Stat. § 297A.67, subd. 29)
- **Wind Energy State Sales Tax Exemption:** Exempts wind facilities and the materials needed to construct them from the state sales tax. (Minn. Stat. § 297A.68 subd. 12)

Grants

- **Minnesota Renewable Energy Equipment Program:** Provides grants to low-income clients for solar air panels and bio-fuel equipment (wood-fired appliances). (Administered by the Office of Energy Security.)
- **Solar Energy Legacy Grants:** Provides grants to local governments for solar energy projects in parks and trails. (Administered by the Minnesota Department of Natural Resources.)

Loans

- **Agricultural Improvement Loan Program:** Low-interest loan program to finance capital improvements to farms, including wind energy with an output of one megawatt or less. (Minn. Stat. § 41B.043)
- **Home Energy Loan Program:** Low-interest loans to homeowners to make energy efficiency improvements. (Administered by the Center for Energy and Environment.)
- **Methane Digester Loan Program:** Zero-interest loans to livestock producers for the purchase of methane digesters used to produce electricity. (Minn. Stat. § 41B.03)
- **Minnesota Housing Finance Agency Fix-Up Fund:** Low-interest loan program for homeowners to finance energy efficiency and renewable energy improvements.
- **Minnesota Housing Finance Agency Rental Rehabilitation Loan Program:** Low-interest financing for energy conservation and other improvements. (Administered by the Center for Energy and Environment.)
- **Minnesota Housing Finance Agency Minnesota Energy Loan Program:** Low-interest financing for energy improvements and general remodeling. (Administered by the Neighborhood Energy Connection.)
- **Rental Energy Loan Fund:** Low-interest financing for energy conservation improvements to residential rental property. (Administered by the Center for Energy and Environment.)
- **Shared Savings Loan Program:** Low-interest financing to farmers for sustainable agriculture practices, including energy production and energy efficiency improvements. (Minn. Stat. § 17.115)
- **Value-Added Stock Loan Program:** Low-interest financing program to assist farmers in purchasing stock in certain cooperative, limited liability companies or limited liability partnerships, including farm-generated wind energy production facilities. (Minn. Stat. § 41B.046)

Appendix B

General Electric Rate Cases Filed by Minnesota's Largest Investor-Owned Utilities, 1981-2010

Decade	Xcel Energy	Ottertail Power	Minnesota Power	Alliant Energy
1981-1990	1981	1986	1981	1982
	1985	1986	1987	1986
	1987			
	1989			
1991-2000	1991		1994	1991
	1992			1991
	1992			1995
2001-2010	2005	2007	2008	2003
	2008	2010	2009	2005
	2010			2010

Source: Office of Energy Security.

Appendix C
Retail Price of Energy for Midwestern States and the U.S., 1990-2009 (cents/kWh)

Year	Minnesota Rank	Minnesota Price	North Dakota Rank	North Dakota Price	South Dakota Rank	South Dakota Price	Iowa Rank	Iowa Price	Wisconsin Rank	Wisconsin Price	United States Average
1990	9	5.33	18	5.75	27	6.13	22	5.93	11	5.37	6.57
1991	11	5.46	17	5.76	26	6.13	19	5.94	10	5.45	6.75
1992	12	5.52	18	5.81	25	6.22	19	5.98	11	5.48	6.82
1993	13	5.60	16	5.83	22	6.20	19	5.97	11	5.52	6.93
1994	14	5.63	16	5.77	22	6.19	18	5.92	11	5.46	6.91
1995	15	5.58	17	5.71	24	6.20	20	6.03	11	5.36	6.89
1996	14	5.54	16	5.65	27	6.18	18	5.94	10	5.25	6.86
1997	17	5.61	18	5.65	27	6.22	21	5.97	9	5.22	6.85
1998	17	5.71	16	5.70	27	6.26	24	6.04	12	5.44	6.74
1999	20	5.83	12	5.49	29	6.35	22	5.93	13	5.53	6.64
2000	18	5.87	11	5.44	28	6.32	21	5.93	15	5.71	6.81
2001	14	5.97	10	5.48	24	6.35	20	6.14	18	6.08	7.29
2002	14	5.80	6	5.45	25	6.26	19	6.01	26	6.28	7.20
2003	13	6.01	7	5.47	21	6.35	16	6.11	26	6.64	7.44
2004	16	6.24	7	5.69	21	6.44	18	6.40	25	6.88	7.61
2005	17	6.61	8	5.92	16	6.60	19	6.99	28	7.48	8.14
2006	17	6.98	8	6.21	12	6.70	20	7.01	29	8.13	8.90
2007	21	7.44	8	6.42	13	6.89	11	6.83	31	8.48	9.13
2008	17	7.79	8	6.69	12	7.14	10	6.89	30	9.00	9.74
2009	20	8.14	5	6.63	13	7.39	12	7.37	31	9.38	9.83

Source: Energy Information Agency, Electric Power Annual 2009-State Data Tables (Nov. 23, 2010).

Appendix D
Electric Conservation Improvement Program Spending, Energy Savings, and CO2 Savings, 2008

	Utility	Spending	kWh Savings	Dollars per kWh saved	CO2 Savings (tons)	Dollars per ton of CO2 saved
Electric IOUs	Alliant Energy	$2,161,420	9,698,758	$0.223	8,840	$244.50
	Minnesota Power	$4,764,631	48,845,282	$0.098	44,522	$107.02
	Otter Tail Power	$2,345,877	15,994,719	$0.147	14,579	$160.91
	Xcel Energy	$50,707,871	331,024,729	$0.153	301,729	$168.06
	Totals - Electric IOUs	**$59,979,799**	**405,563,488**	**$0.148**	**369,671**	**$162.25**
Electric Cooperatives	Dairyland Power Coop	$2,347,537	8,730,146	$0.269	7,958	$294.99
	East River Electric Power Coop, Inc.	$342,760	535,490	$0.640	488	$702.38
	Great River Energy	$26,209,493	60,126,881	$0.436	54,806	$478.22
	Minnesota Valley Coop L&P	$2,335,250	746,400	$3.129	680	$3,434.19
	Minnkota Power Coop9	$2,284,562	5,088,664	$0.449	4,638	$492.57
	Sioux Valley Southwestern Electric	$77,384	2,696,880	$0.029	2,458	$31.48
	Totals - Electric Coops	**$33,596,986**	**77,924,461**	**$0.431**	**71,028**	**$473.01**
Electric Municipals	Alexandria Light & Power	$363,200	1,466,520	$0.248	1,337	$271.65
	Benson Municipal Utilities	$119,760	191,380	$0.626	174	$688.28
	Brainerd Public Utilities	$83,543	192,462	$0.434	175	$477.39
	City of Anoka	$398,000	1,511,100	$0.263	1,377	$289.03
	City of Jackson	$87,369	822,460	$0.106	750	$116.49
	City of Luverne	$126,600	668,717	$0.189	610	$207.54
	Detroit Lakes Public Utility	$120,175	130,860	$0.918	119	$1,009.87
	East Grand Forks Water & Light Dept.	$360,624	157,147	$2.295	143	$2,521.85
	Glencoe Light & Power Commission	$76,340	313,304	$0.244	286	$266.92
	Grand Rapids Public Utilities Commission	$149,500	4,732,500	$0.032	4,314	$34.65
	Hibbing Public Utilities Commission	$170,323	609,129	$0.280	555	$306.89
	Hutchinson Utilities Commission	$458,496	10,220,965	$0.045	9,316	$49.22
	Marshall Municipal Utilities	$374,230	1,811,996	$0.207	1,652	$226.53
	Melrose Public Utilities	$76,500	1,474,772	$0.052	1,344	$56.92

(continued on next page)

	Utility	Spending	kWh Savings	Dollars per kWh saved	CO2 Savings (tons)	Dollars per ton of CO2 saved
Electric Municipals (cont.)	Minnesota Municipal Power Agency	$907,690	2,237,690	$0.406	2,040	$444.95
	New Ulm Public Utilities	$337,710	3,005,272	$0.112	2,739	$123.30
	Shakopee Public Utilities	$806,546	6,000,503	$0.134	5,469	$147.48
	Southern MN Municipal Power Agency	$1,580,400	8,173,504	$0.193	7,450	$212.13
	St. James Municipal Light & Power	$66,150	277,375	$0.238	253	$261.46
	Thief River Falls Municipal Utility	$166,330	558,108	$0.298	509	$326.78
	Triad (Austin, Owatonna, Rochester)	$2,966,643	16,053,508	$0.185	14,633	$202.74
	Wadena Light & Water	$83,072	91,800	$0.905	84	$988.95
	Willmar Municipal Utilities	$294,796	1,123,506	$0.262	1,024	$287.89
	Windom Municipal Utilities	$101,000	1,607,600	$0.063	1,465	$68.94
	Worthington Public Utilities	$177,980	1,022,930	$0.174	932	$190.97
	Totals - Electric Municipals	**$10,831,669**	**64,979,058**	**$0.167**	**59,228**	**$182.88**
	TOTALS - COOPERATIVES AND MUNICIPALS	**$44,428,655**	**142,903,519**	**$0.311**	**130,257**	**$341.08**
	TOTALS – ALL UTILITIES	**104,408,454**	**548,467,007**	**$0.190**	**499,928**	**$208.85**

Source: Minnesota Office of Energy Security, *Minnesota Department of Commerce, 2007-2008 Minnesota Conservation Improvement Program Energy and Carbon Dioxide Savings Report* (Jan. 15, 2010).

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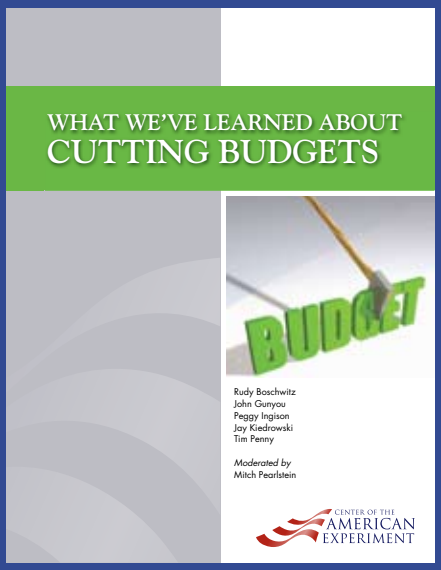

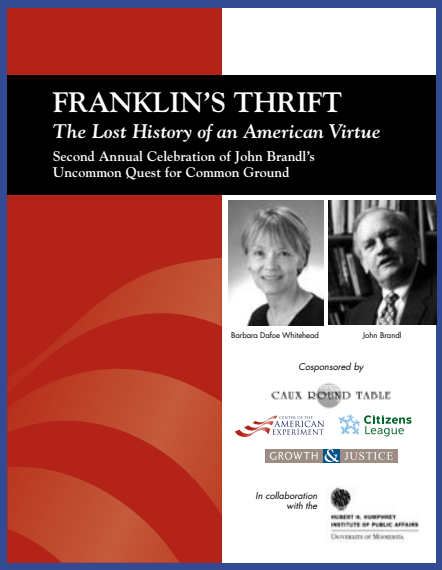

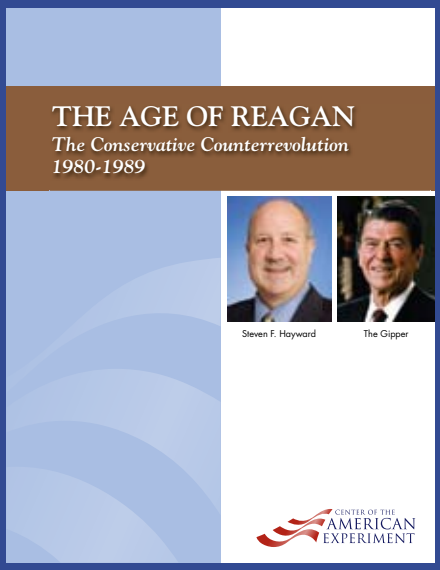

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