



Renewing Minnesota

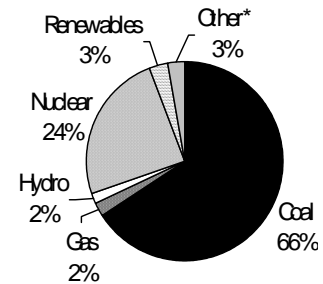
A 10 Percent by 2020 National Renewable Electricity Standard Will Benefit Minnesota's Economy

The U.S. Senate passed an energy bill in late July 2003 (HR 6) that for the second straight year contains a national renewable electricity standard, which requires major electric companies¹ to gradually increase the share of electricity sales from renewable energy sources (wind, solar, bioenergy, and geothermal) to 10 percent by 2020. A House-passed energy bill contains no such provision. A committee of House and Senate members is meeting to develop a final bill, with plans to bring it to a vote in both bodies this October.

UCS used a modified version of the U.S. Energy Information Administration's (EIA) National Energy Modeling System computer model to examine the costs and benefits of the Senate renewable electricity standard (RES) proposal – often called a renewable portfolio standard or RPS.² This update of a 2002 UCS analysis uses a higher long-term natural gas price forecast to more accurately reflect current information (see below). We found that the RES – along with Senate-passed tax credits for renewable energy – promises to bring economic, energy security, and environmental benefits to Minnesota.

Current Electricity Mix. Minnesota is heavily reliant on coal and nuclear power to generate its electricity. All of the coal, nuclear fuel, natural gas and oil is imported into the state, exporting dollars and jobs in the process. Renewable energy sources such as wind and bioenergy (plants and clean plant wastes such as prairie grasses or crop wastes) currently provide a small amount of the state's electricity. In 2001, Minnesota imported about 20 percent of the electricity used in the state.

Minnesota's Electricity Mix, 2001



*Oil and Municipal Solid Waste
Source: EIA, 2003

Minnesota's Renewable Energy Potential

Resource	Generation (billion kWh)	% of 2001 Electricity Sales
Wind	991.3	1,644%
Solar PV	55.3	92%
Bioenergy	30.3	50%
Landfill Gas	0.3	1%
Total	1,077.2	1,787%

Renewable Energy Potential.

Minnesota has the technical potential to generate nearly 18 times its current electricity needs from renewable energy. The resources with the greatest potential in Minnesota are wind and bioenergy. Solar photovoltaics (PV) also have a significant technical potential, but will likely make a smaller contribution to the state's electricity supply due to higher costs. While not all of Minnesota's renewable potential will be developed due to economic, physical and other limitations, the national renewable electricity standard will spur significant development in Minnesota.

Renewable Energy Development. UCS analysis found that under a 10 percent renewable electricity standard, Minnesota would increase its total homegrown renewable power to more than 3,550 megawatts (MW) by 2020. The majority of this development would be powered by Minnesota's strong winds. This level of renewable development would produce enough electricity to meet the needs nearly of 2.1 million typical homes, provide over 15 percent of all the electricity sold in the state, and reduce the use of imported coal and natural gas.

Economic Development. Renewable energy development would bring significant economic benefits to Minnesota. Through 2020, the national standard would produce

- \$815 million in new capital investment
- \$54 million in new property tax revenues for local communities
- \$21 million in lease payments to farmers and rural landowners from wind power³
- Additional revenue from the export of renewable energy credits

Consumer Costs and Benefits. The national standard and renewable energy tax credits passed by the Senate would slightly reduce long run energy costs to Minnesota consumers. Increased competition from renewable energy leads to lower natural gas prices that offset the incremental costs of meeting the RES in the state. Total annual consumer energy bills (not including transportation) would be essentially the same under business as usual in 2010, and nearly \$130 million or 1.5 percent lower in 2020. Cumulative consumer savings through 2020 would be more than \$170 million.⁴

Environmental Benefits. The renewable electricity standard will reduce air pollution from power plants that threaten people's health by burning coal, oil, and natural gas. Carbon dioxide emissions, which trap heat in the atmosphere and cause global warming, would also be reduced. Nationally, the RES will reduce about 38 million metric tons of carbon emissions a year by 2020. The renewable standard will also reduce harmful water and land impacts from extracting, transporting and using fossil fuels.

Renewable Energy Can Provide A Hedge Against Higher Natural Gas Prices

Natural gas fuels most of the new electricity generation built in the United States today, and is expected to do so in the future without additional policy support for renewable energy. The increase in natural gas use for electricity is likely to lead to prices that are higher and more volatile than those used in EIA's long-run business as usual forecast. Research conducted by EIA and UCS both show that increased development of renewable energy under a national RES can conserve natural gas supplies, reduce natural gas prices, and lower natural gas bills for homes and businesses.⁵ In addition, the analyses show that the more expensive natural gas is, the greater the savings will be from reducing natural gas use through a renewable electricity standard.

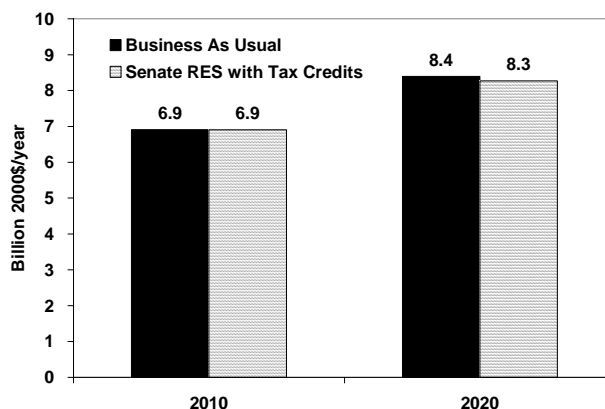
Responding to the price volatility from natural gas shortages over the past several years, EIA has dramatically increased its projection of short-run gas prices, but only modestly increased its projection of long-term prices. EIA continues to project long-term wellhead prices in the range of \$3-\$4 per million Btu despite current prices around \$5 per million Btu and the increasing number of analysts projecting long-term gas prices between \$4-\$6 per million Btu. The results presented above reflect a UCS analysis using a conservative gas price forecast that is slightly lower than EIA's most recent business as usual projection through 2013 and 20 percent higher than EIA's projection of \$3.60 per million Btu by 2020.

Providing a clean, safe energy future

A national renewable electricity standard would make Minnesota's energy supply more reliable and secure. It would diversify the fuel mix using energy produced within the state. The renewable electricity standard is a sensible step toward a balanced approach to meeting future energy demands with renewable technologies, and is far more responsible than continuing to rely on polluting or dangerous power sources. Renewable energy is ready to provide Minnesota with a clean, safe energy future.

The Union of Concerned Scientists is a nonprofit partnership of scientists and citizens combining rigorous scientific analysis, innovative policy development, and effective citizen advocacy to achieve practical environmental solutions. For more information, visit our web site at www.ucsusa.org/clean_energy.

Total Consumer Energy Bills, Minnesota^a



^aExcludes transportation

¹ Small utilities and publicly-owned utilities are exempted.

² More information about UCS' modeling approach can be found in the October 2001 report *Clean Energy Blueprint: A Smarter National Energy Policy for Today and the Future*, which is available at www.ucsusa.org/clean_energy/renewable_energy/page.cfm?pageID=44.

³ Results presented are in 2000\$. Cumulative results are in net present value using an 8 percent real discount rate.

⁴ The House and Senate energy bills included renewable energy tax credits worth between \$2.6 billion (Congress' estimate) and \$5.2 billion (UCS' estimate) over the next 10 years. The bills also included 10 years' worth of subsidies for fossil fuel and nuclear power totaling about \$9.1 billion in the Senate bill and \$18.7 billion in the House bill. The taxpayer costs of the additional subsidies for renewable energy and conventional fuels were not included in the analysis. (Note: these dollar figures are *not* discounted.)

⁵ UCS, *Renewable Energy Can Help Alleviate Natural Gas Crisis*, June 2003.