



# Renewing Pennsylvania

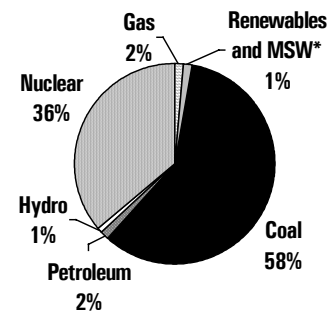
## The Senate's National Renewable Energy Standard Will Benefit Pennsylvania's Economy

The U.S. Senate passed an energy bill in late April 2002 (HR 4) that contains the first-ever national renewable energy standard, which requires major electric companies<sup>1</sup> to gradually increase sales of electricity from renewable energy sources (wind, solar, bioenergy, and geothermal) to about 10 percent by 2020. A U.S. House-passed energy bill contains no such provision. A committee of House and Senate members began meeting to develop a final bill this summer, with plans to bring it to a vote in both bodies this fall.

UCS used a modified version of the U.S. Energy Information Administration's National Energy Modeling System computer model to examine the costs and benefits of the Senate's proposed standard – often called a renewable portfolio standard or RPS.<sup>2</sup> We found that this policy – along with Senate-passed tax credits for renewable energy – promises to bring economic development and energy security to Pennsylvania, as well as consumer and environmental benefits.

**Current Electricity Mix.** Pennsylvania relies heavily on fossil fuels and nuclear power to generate its electricity. All of the oil and nuclear fuel is imported into the state, exporting dollars and jobs in the process. Safe, homegrown renewable energy sources such as wind and bioenergy (plants and clean plant wastes such as switch grass or mill wastes) currently provide less than 1 percent of the electricity generated in Pennsylvania. In 2000, Pennsylvania exported about 34 percent of the electricity generated in the state.

**Pennsylvania's Electricity Mix, 2000**



\*Municipal Solid Waste  
Source: EIA, 2002

### Pennsylvania's Renewable Energy Potential

Resource	Generation (billion kWh)	% of 2000 Electricity Sales
Wind	67.9	50%
Bioenergy	11.0	8%
Landfill Gas	1.7	1%
Total	80.6	59%

**Renewable Energy Potential.** Pennsylvania has the technical potential to generate over half its current electricity needs from renewable energy. The resources with the greatest potential in Pennsylvania are wind and bioenergy. Emerging renewable technologies such as solar photovoltaics also have the potential to play a smaller but important part in the state's electricity supply. While not all of the state's renewable potential will be developed due to economic, physical, and other limitations, the national renewable energy standard will spur significant development in Pennsylvania.

**Renewable Energy Development.** UCS analysis found that under a 10 percent renewable energy standard, Pennsylvania would increase its total homegrown renewable power to nearly 3,800 megawatts (MW) by 2020. The majority of this development would be powered by Pennsylvania's strong winds. This level of renewable development would produce enough electricity to meet the needs of nearly 2.5 million typical homes.

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

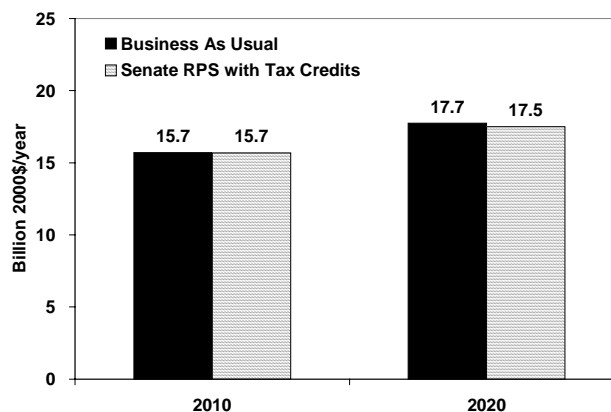
- \$705 million in new capital investment
- \$34 million in new property tax revenues for local communities
- \$10 million in lease payments to farmers and rural landowners from wind power<sup>3</sup>

**Consumer Costs and Benefits.** The national standard and renewable energy tax credits passed by the Senate would slightly reduce long run energy costs to Pennsylvania consumers. Increased competition from renewable energy leads to lower natural gas prices that offset the incremental costs of meeting the renewable energy standard in the

state. Total annual consumer energy bills (not including transportation) would be \$20 million less than under business as usual in 2010, and \$250 million or 1.4 percent lower in 2020. Cumulative consumer savings through 2020 would be \$430 million.<sup>4</sup>

**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 renewable energy standard will reduce about 27 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.

**Total Consumer Energy Bills, Pennsylvania<sup>a</sup>**



<sup>a</sup>Excludes transportation

**The renewable standard increases consumer savings if natural gas prices increase**

In the future, natural gas is projected to fuel much of the new electricity generation built in the United States without additional policies for renewable energy. This increase in demand for natural gas may lead to natural gas prices that are higher and more volatile than those used in our base case analysis. The more expensive natural gas is, the greater the savings will be from reducing natural gas use through a renewable energy standard.

Specifically, UCS examined the effects of a renewable standard on an alternative scenario where wholesale natural gas prices are 35 percent higher by 2020. In this case, cumulative consumer energy bill savings from the renewable standard would be more than 30 percent greater. Renewable energy generation and economic development would also increase significantly in Pennsylvania if gas prices were higher.

**Providing a clean, safe energy future**

A national renewable energy standard would make Pennsylvania’s energy supply more reliable and secure. It would diversify the fuel mix using energy produced within the state. The renewable energy standard proposed by the Senate 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 Pennsylvania with a clean, safe energy future.

**Impact of National RPS Proposal in Pennsylvania**

In 2020:	Senate RPS with Tax Credits	Senate RPS with Tax Credits (High Gas Prices)
Total Renewable Energy Capacity	3,767 MW	5,062 MW
Cumulative New Capital Investment	\$705 million <sup>a</sup>	\$840 million
Cumulative Consumer Energy Bill Savings <sup>b</sup>	\$430 million	\$570 million
Annual Consumer Energy Bill Savings <sup>b</sup>	\$250 million 1.4%	\$400 million 2.1%

Notes

- a. All dollars presented in 2000\$. Cumulative results are in net present value using an 8 percent real discount rate.
- b. Excludes transportation.

*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/energy](http://www.ucsusa.org/energy).*

<sup>1</sup> Small utilities and publicly-owned utilities are exempted.

<sup>2</sup> 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/energy/blueprint.html](http://www.ucsusa.org/energy/blueprint.html).

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

<sup>4</sup> The House and Senate energy bills include 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 include 10 years’ worth of subsidies for fossil fuel and nuclear power totaling about \$9.1 billion in the Senate bill and \$28 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.)