



# Renewing Where We Live

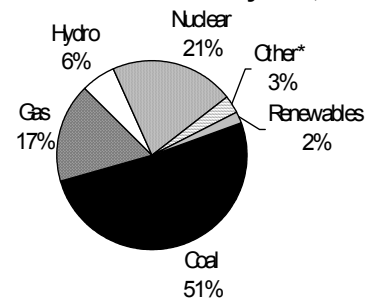
## A 10 Percent by 2020 National Renewable Electricity Standard Will Benefit America's Economy

America's energy choices affect our national security, our economy, our family budgets, and our environment. 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 companies<sup>1</sup> 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.<sup>2</sup> 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 by adopting a national standard of 10 percent – along with Senate-passed tax credits for renewable energy – the U.S. can meet a significant portion of its electricity needs with renewable energy while generating substantial economic and environmental benefits for the nation. See our briefing series *Renewing Where We Live* for more information on the benefits of a renewable electricity standard for your state.

**Electricity Mix.** Today, the United States relies heavily on coal, nuclear power and natural gas to generate its electricity. Renewable energy sources such as wind, geothermal and bioenergy currently provide a negligible amount of the nation's electricity. According to EIA, U.S. reliance on fossil fuels – particularly natural gas and coal – for electricity generation will increase if we continue on our current path. By 2020, EIA projects natural gas to increase to 24 percent of total generation, while they project renewable resources to barely increase.

United States Electricity Mix, 2001



\*Includes municipal solid waste and other fuels.  
Source: EIA, 2003

### United States Renewable Energy Potential

| Resource     | Generation (billion kWh) | % of 2001 Electricity Sales |
|--------------|--------------------------|-----------------------------|
| Wind         | 14,244                   | 426%                        |
| Solar        | 2,203                    | 66%                         |
| Bioenergy    | 742                      | 22%                         |
| Geothermal   | 191                      | 6%                          |
| Landfill Gas | 40                       | 1%                          |
| Total        | 17,419                   | 521%                        |

**Renewable Energy Potential.** The resources with the greatest potential in the U.S. are wind, solar, and bioenergy (plants and clean plant wastes). America has the technical potential to generate 5.2 times its current electricity needs from wind, solar, and other renewable energy sources. While not all of the United States' renewable potential will be developed due to economic, physical and other limitations, the national renewable electricity standard will spur significant development.

**Renewable Energy Development.** UCS analysis found that under a 10 percent national RES, the U.S. would increase its total

homegrown renewable power to over 79,600 megawatts (MW) by 2020, compared to about 16,000 MW in 2002. This development would be powered primarily by America's strong winds, with significant contributions from bioenergy and geothermal. This level of renewable development would produce enough electricity to meet the needs of 57 million typical homes and provide 7 percent of all the electricity sold in the country.

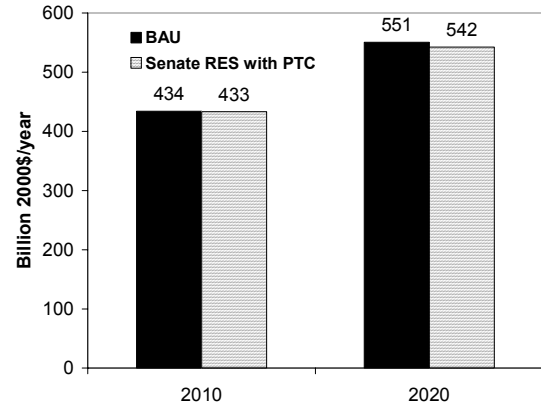
**Economic Development.** Renewable energy development would bring significant economic benefits to the United States. Through 2020, the national standard would produce

- \$18 billion in new capital investment
- \$1.2 billion in new property tax revenues for local communities
- \$430 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 reduce long run energy costs to consumers. Total annual consumer energy bills (not including transportation) would be \$1 billion lower than business as usual in 2010, and \$8.3 billion or 1.5 percent lower in 2020. The present value of total consumer savings would be \$17.6 billion between 2002 and 2020. If taxpayer costs from the tax credits and increased federal research and development funding for renewable energy are included, total consumer savings would be \$12.6 billion.<sup>4</sup> Increased competition from renewable energy leads to lower natural gas prices, which more than offset the slightly higher costs of generating renewable electricity in the United States.

**Environmental Benefits.** Increasing renewable energy use in the United States 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 electricity standard 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.

**Total Consumer Energy Bills, United States<sup>a</sup>**



<sup>a</sup>Excludes transportation

### 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.<sup>5</sup> 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 (MMBtu) despite current prices around \$5/MMBtu and the increasing number of analysts projecting long-term gas prices between \$4-\$6/MMBtu. The results 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/MMBtu by 2020. EIA's own analyses of a 10 percent RES, using higher renewable energy costs and lower natural gas prices, still find virtually no impact on electricity prices and consumer savings of up to \$13.2 billion.<sup>6</sup>

### Providing a cleaner, safer energy future

A national renewable electricity standard would make the United States' energy supply more reliable and secure. It would diversify the fuel mix using homegrown energy sources. The RES is a sensible step toward a balanced approach to meeting future energy demands, and is far more responsible than continuing to rely on polluting or dangerous power sources. Renewable energy is ready to provide America with a cleaner, safer 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](http://www.ucsusa.org/clean_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/clean\\_energy/renewable\\_energy/page.cfm?pageID=44](http://www.ucsusa.org/clean_energy/renewable_energy/page.cfm?pageID=44).

<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 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. (Note: these dollar figures are not discounted.)

<sup>5</sup> UCS, *Renewable Energy Can Help Alleviate Natural Gas Crisis*, June 2003.

---

<sup>6</sup> For more information see [www.ucsusa.org/clean\\_energy/renewable\\_energy/page.cfm?pageID=1222](http://www.ucsusa.org/clean_energy/renewable_energy/page.cfm?pageID=1222).