

Renewable Energy as a Climate Solution

A National Renewable Electricity Standard and Economy-Wide Carbon Cap Work Effectively Together

Ensuring healthy air and a stable climate for our children and grandchildren requires that we make responsible decisions about our energy sources. Renewable energy resources such as wind, solar, geothermal, and bioenergy offer a swift, practical, and affordable path away from the polluting fossil fuels that are leading contributors to global warming.

A strong requirement to significantly reduce heat-trapping emissions in all sectors of the economy is essential to avoid the most dangerous effects of global warming. But it alone is not sufficient to overcome the unique barriers to the widespread adoption of renewable energy. Fully unlocking the potential of these resources and their benefits will require a policy such as a national renewable electricity standard. Combining these and other well-designed policies in a comprehensive approach offers the best opportunity to meet our emission reduction goals efficiently and economically.

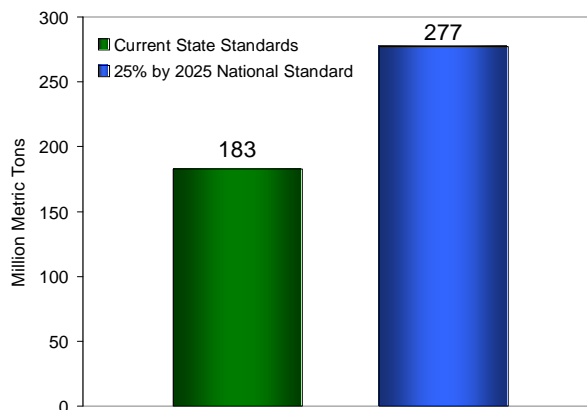
A Smart Climate Solution

Electricity generation accounts for one-third of U.S. global warming emissions¹ and will be a critical focus for emissions reductions. Renewable electricity standards provide a smart and affordable means for reducing emissions in the electric sector with a proven track record. More than half of U.S. states have adopted standards, which require electricity suppliers to gradually increase their use of renewable energy. Analysis by the Union of Concerned Scientists (UCS) found that by 2025 these state standards would reduce total annual carbon dioxide (CO₂) emissions by 183 million metric tons (MMT)—equivalent to taking 30 million cars off the road.²



While many states are making important strides in reducing carbon emissions with renewable electricity standards, a national standard could achieve even greater benefits. A 2009 UCS analysis examining the costs and benefits of a 25-percent-by-2025 national standard, for example, found that U.S. power plant CO₂ emissions would decrease 277 MMT per year by 2025 at a net cumulative savings to energy consumers of \$64 billion.³ These emissions reductions would also create important additional savings once CO₂ emissions are regulated by the federal government. For example, the UCS analysis found that the 25 percent national standard would generate \$19.4 billion in cumulative savings by 2025 from allowances that would not have to be purchased.

Comparison of Annual Power Plant CO₂ Reduction from State and National Renewable Electricity Standards, 2025



Source: UCS

Overcoming Market Barriers

While a national economy-wide carbon cap is vital to reducing emissions, the United States would also benefit from the implementation of well-designed complementary policies. Such policies help markets overcome key barriers to finding more efficient and cost-effective carbon reduction paths.

Accelerating renewable energy development, for example, requires addressing upfront costs that may be greater than those of short-term actions for reducing carbon like using more natural gas in place of coal. Electric utilities, as well as other businesses and households, often have short investment payback criteria and may be reluctant to invest in renewable energy technologies, which are capital-intensive but cost-effective over their lifetimes. In addition, credit and insurance providers lack information about renewable energy, thereby reducing developer access to adequate financing and increasing project costs. Unnecessary electricity and interconnection rules also make it difficult or expensive for renewable electricity producers to gain access to the power grid.

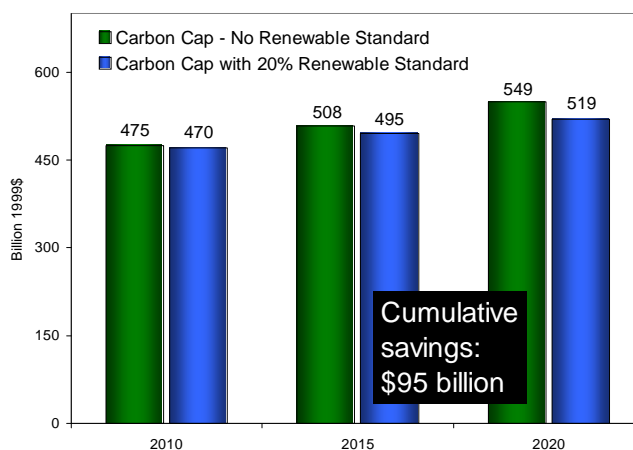
A national renewable electricity standard in tandem with an economy-wide cap and other policies to increase transmission capacity for renewable energy can help the broader market account for their longer-term economic and environmental benefits.

Integrated Approach Saves Money

An integrated approach to reducing carbon emissions can increase consumer and energy savings, emissions reductions, and economic benefits. For example, a 2001 U.S. Energy Information Administration (EIA) analysis found that a national renewable standard would help reduce the cost of complying with an economy-wide carbon cap.⁴ According to the EIA, including a 20-percent standard under an economy-wide cap could reduce energy bills \$95 billion cumulatively by 2020 when compared with a cap-and-trade scenario without the standard. The savings are primarily due to reducing the demand for natural gas, which in turn lowers natural gas prices and bills for all

consumers. Since natural gas is used for almost 20 percent of our electricity generation, lower gas prices also lead to lower electricity bills. Neither of the scenarios the EIA examined included energy efficiency measures, which would make them even more affordable. In fact, a 2009 UCS analysis found that combining an economy-wide cap with a suite of sector-specific policies (including a national renewable standard and efficiency standards and incentives in buildings, industry, and transportation) would achieve far greater cumulative consumer savings through 2030 (\$1.6 trillion) than compared with a scenario without the complementary policies (\$0.6 trillion).⁵

Comparison of Total Consumer Energy Bills*



*Not including transportation.
Source: EIA, 2001.

Adopting a national renewable electricity standard alongside a national economy-wide cap on carbon would build on strong state progress in addressing climate change with renewable energy, and serve as a powerful, near-term tool for more efficiently and cost-effectively achieving significant emission reductions.

¹ U.S. Environmental Protection Agency. 2004. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2002. April.

² For more information about state renewable electricity standards, visit www.ucsusa.org/res.

³ UCS. 2009. *Clean Power, Green Jobs*. March.

⁴ EIA. 2001. *Analysis of Strategies for Reducing Multiple Emissions from Electric Power Plants*. July.

⁵ UCS. 2009. *Climate 2030: A National Blueprint for a Clean Energy Economy*. May.

For additional information, visit the UCS Clean Energy website at www.ucsusa.org/clean_energy.

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