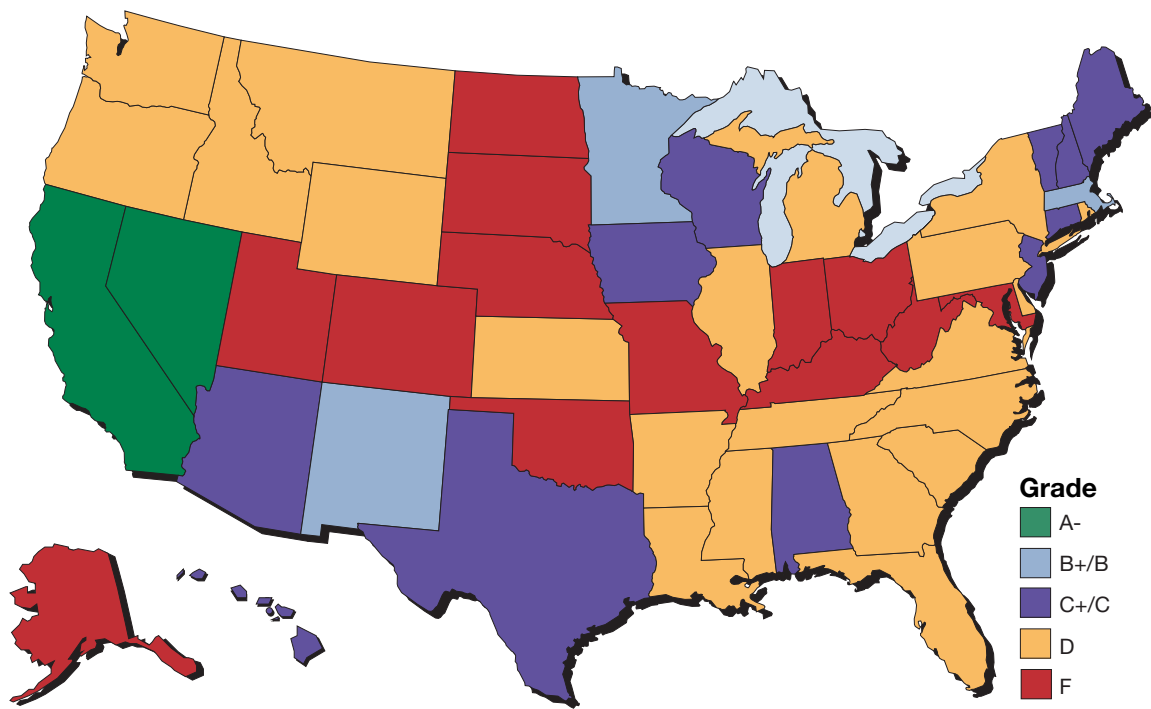


Plugging In Renewable Energy

GRADING THE STATES



Most Likely to Improve

- Colorado
- Connecticut
- Illinois
- Iowa
- Maine
- Maryland
- New York
- Rhode Island
- Washington
- Wisconsin

Hall of Shame

- Missouri
- Nebraska
- North Dakota
- Oklahoma
- South Dakota
- Utah



Union of Concerned Scientists

Citizens and Scientists for Environmental Solutions

AMERICA'S ELECTRICITY system is dominated by fossil fuels. The result is a system that lacks diversity and security, threatens the health of our citizens, jeopardizes the stability of Earth's climate, and robs future generations of clean air, clean water, and energy independence.

The Union of Concerned Scientists has assigned grades to each of the 50 states based on their commitment to supporting clean, sustainable energy sources such as wind, solar, geothermal, and bioenergy. We measure commitment by the projected results of renewable electricity standards for electric companies and dedicated renewable electricity funds. Current renewable energy generation is also considered. Our analysis shows that 19 states have stepped in to fill a leadership vacuum at the federal level by taking important first steps toward developing a clean energy system. Among our findings:

- **A mere handful of states are responsible for most of the projected gains in renewable energy.** California accounts for 44 percent of all forecasted new development; California and Texas together account for nearly 60 percent; and the top five states account for more than 80 percent.
- **Only California and Nevada received A- grades** for enacting standards that increase renewable electricity sales by one percentage point per year for at least 10 years, while covering utilities serving more than two-thirds of electricity use in each state.
- **Thirty-four states received failing grades of D or F** for their lack of commitment to renewable electricity, with six qualifying for our Hall of Shame.
- **Most states have only begun to tap their abundant renewable electricity potential.**

- **Renewable energy generated through state standards and funds will significantly exceed voluntary purchases** of renewable (or “green”) electricity, but fall far short of what a fair, cost-effective national standard could produce.

Renewable Energy Potential

Wind, solar, bioenergy, geothermal, and landfill gas have the technical potential to provide more than five times the electricity currently needed by the United States. Thirty states have the potential to generate all of their electricity from non-hydroelectric renewable energy and still export clean power to others. While the upper Midwest and Great Plains states have the greatest potential, every state has the potential to produce more than one-quarter of its current electricity use from renewable energy.

Current Renewable Energy Use

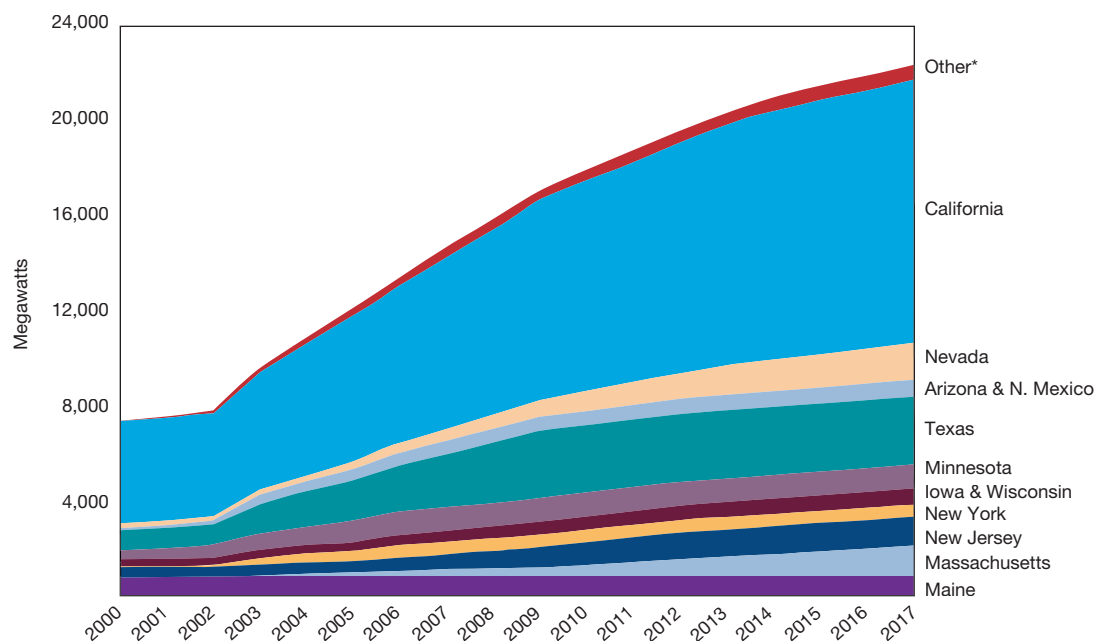
Despite the enormous potential for renewable energy, only a few states are generating renewable electricity from sources other than hydroelectric facilities at meaningful levels. Maine ranks the

highest, generating nearly 30 percent of its electricity from renewable energy, followed by Hawaii, California, and New Hampshire at approximately 10 percent each. Thirty states are at or below the national level of 1.8 percent, with 23 of those below one percent.

Renewable Electricity Standards

Thirteen states have adopted renewable electricity standards, which UCS forecasts will lead to the development of 14,230 megawatts (MW) of new renewable capacity by 2017 and support the continued operation of more than 7,000 MW of existing renewable generators. Combined, this represents enough clean power to meet the electricity needs of nearly 15 million typical (nonelectric-heating) U.S. homes. California's standard will create the largest market for renewable energy, supporting more than half of the total capacity for all states. Because of its size, Texas will create the second largest market. Nevada, Massachusetts, and New Jersey complete the top five in this category, each with standards supporting more than 1,000 MW of total capacity.

New and Existing Renewable Energy Capacity from State Standards and Funds



*Includes Connecticut, Delaware, Illinois, Montana, Oregon, Pennsylvania, and Rhode Island. SOURCE: UCS, 2003.



Wellesley, MA High School solar photovoltaic array. Courtesy of Schott Applied Power.



Klondike Wind Power Facility, Wasco, OR. Courtesy of GE Wind Energy.

Renewable Electricity Funds

Fifteen states have adopted renewable electricity funds, which UCS forecasts will invest nearly \$4.5 billion over a 20-year period, thereby supporting an additional 1,000 MW of new renewable capacity by 2017—enough to meet the electricity needs of approximately 580,000 typical U.S. homes. California leads the nation in total dollar commitment to renewable energy, accounting for nearly half of all funding. Illinois, Massachusetts, Connecticut, New Jersey, Arizona, and Minnesota are also making significant commitments, each in excess of \$100 million. Nine states have implemented both renewable electricity funds and standards.

Other Renewable Energy Policies and Markets

Several other policies and voluntary approaches have been adopted at the federal, state, or local level, including net metering, generation disclosure, solar/wind access laws, construction and design standards, and government green power purchasing requirements. Financial incentives such as tax incentives, grants, loans, rebates, and production incentives have also been popular in many states. In addition, millions of customers in 36 states now have the opportunity to support renewable energy directly through voluntary purchases. While these policies and voluntary measures will assist renewable energy development, they do not repre-

Closing the renewable energy gap is too important a goal to leave to individuals and a handful of states.

What America needs is a strong national policy with specific targets for plugging renewable energy into the electricity system.

sent firm commitments and are therefore not considered in our grading.

Grading State Renewable Commitments

The variables that best reflect a state's commitment are the rate at which renewable energy generation is projected to increase, ramp-up duration, and the extent to which a standard applies to all electricity suppliers in the state. Another indication of a state's commitment is how much renewable energy generation it has previously supported and is still in operation today.

Passing Grades

A grades are reserved for states that have standards or funds projected to achieve a rate of increase of one percentage point per year, last at least 10 years, and apply to all suppliers. Unfortunately,

no state achieved a straight A. UCS assigned A- grades to two states (California and Nevada) that meet the first two criteria, and apply to at least two-thirds of the electricity sales in each state.

B grades were given to states with standards or funds that require a rate of increase of at least 0.5 percent per year, last at least five years, and cover suppliers serving most customers. Three states qualified: Massachusetts, Minnesota, and New Mexico.

C grades were given to states with projected increases of at least 0.2 percent per year for at least five years, and whose standards cover suppliers serving most customers. States also received a C if they did not meet this minimum ramp-up requirement but have a commitment to make new renewable energy more than one percent of total retail sales by 2017. States whose existing renewable resources provide five percent or more of retail sales also received C grades.

Failing Grades

States receiving a grade of D or F do not pass the test of using their available renewable resources today or making firm commitments to do so in the future.

D grades were given to states with a commitment to new renewable energy below one percent of total retail sales in 2017 or with existing renewable generation between one and five percent today.

F grades were given to states with no commitment to future renewable energy



Geothermal power plant. Courtesy of NREL.

development whatsoever and low levels of existing renewable energy (below one percent of sales).

Only 16 states received a passing grade of C or better, with two receiving an A- and another three receiving a B+ or a B. The great majority of states—34—received a D or F. UCS also nominated six of the failing states to its Hall of Shame due to their high renewable energy potential but lack of commitment. We also designated 10 states as “Most Likely to Improve,” because policy efforts to support future renewable energy development have been proposed.

Total Projected Development

UCS projects the 19 states that have enacted standards or funds will increase their renewable energy capacity 15,215 MW by 2017—a 113 percent increase over 1997 levels. This increase will provide enough electricity for 10.4 million typical U.S. homes and eliminate as much carbon dioxide—the main heat-trapping gas causing global warming—as taking 7.4 million cars off the road or planting 11.2 million acres of trees (an area approximately the size of Maryland and New Jersey combined).

The overall development resulting from standards and funds should signifi-

cantly exceed development resulting from voluntary customer choice programs. A recent National Renewable Energy Laboratory (NREL) study found that customer choice programs may only add enough renewable generation to equal 0.1 percent of U.S. electricity sales by 2010. Existing state standards and funds are projected to add 8.3 times as much renewable generation by that date. Even under an optimistic scenario, NREL projects customer choice programs would add 27 percent less renewable generation than UCS projects for existing state standards and funds (not counting additional state and national policies that might be enacted).

The Case for a National Renewable Electricity Standard

The tremendous disparity in state programs and failing grades for 34 states speak to the need for a national renewable electricity standard. By setting a minimum requirement on which state standards and voluntary programs could build, a national standard would prove more equitable and lead to much higher and cost-effective levels of renewable energy generation.

The U.S. Senate passed a 10 percent by 2020 renewable electricity standard in

its comprehensive energy bill in 2002, but the bill died when a House and Senate conference committee could not reconcile their versions. The House Energy and Commerce Committee subsequently rejected a renewable electricity standard of 20 percent by 2025 earlier this year. The Senate is expected to debate the issue this May.

The 10 percent by 2020 national standard passed by the Senate last year would lead to the development of 3.4 times more new renewable generation than existing state standards and funds. Studies by the U.S. Energy Information Administration (EIA) and UCS also show that such a standard could reduce prices for both electricity and natural gas, resulting in consumer energy bill savings.

A 20 percent by 2020 national standard would lead to the development of 12.8 times as much new renewable generation as existing state standards and funds. EIA found that this standard would reduce natural gas prices enough to offset a slight increase in electricity prices, resulting in virtually no net cost increase to consumers. UCS analysis suggests this standard could actually save consumers money while creating nearly \$80 billion in new capital investment and more than \$6 billion in revenues for rural communities and landowners.



Switchgrass for bioenergy. Photograph by Warren Gretz. Courtesy of NREL.

To read the May 2003 report *Plugging In Renewable Energy: Grading the States* in its entirety, go to www.ucsusa.org/clean_energy.



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National Headquarters
Two Brattle Square
Cambridge, MA 02238-9105
Phone: (617) 547-5552
Fax: (617) 864-9405

West Coast Office
2397 Shattuck Ave., Ste. 203
Berkeley, CA 94704
Phone: (510) 843-1872
Fax: (510) 843-3785

Washington Office
1707 H St. NW, Ste. 600
Washington, DC 20006-3962
Phone: (202) 223-6133
Fax: (202) 223-6162



Union of Concerned Scientists

Citizens and Scientists for Environmental Solutions

Website www.ucsusa.org

Email ucs@ucsusa.org