

FACT SHEET

A National Renewable Electricity Standard Will Benefit North Dakota's Economy and the Environment

America's current energy system is dominated by fossil fuels, which pose serious threats to our health and environment and leave us vulnerable to price spikes and supply shortages. With the threat of global warming becoming increasingly urgent, we must make responsible energy choices today that ensure a safe, reliable power supply *and* a healthy environment for future generations.



Photo: Minnkota Power Cooperative, Inc., NREL

Fortunately, there are practical and affordable ways to achieve this goal. Homegrown renewable energy resources—such as wind, solar, bioenergy, and geothermal—can help reduce our dependence on polluting fossil fuels. These clean energy sources can also help stabilize energy prices, stimulate the development of

innovative new technology, and create high-quality jobs and other economic benefits for North Dakota and the nation.

Strong national policies can ensure these benefits are fully realized. The policy that has proven most effective and popular at the state level is a renewable electricity standard (also known as a renewable portfolio standard or RPS), which requires electricity providers to supply a minimum percentage of their power from clean energy sources. As of June 2007, renewable electricity standards have been adopted in 23 states. At the national level, the U.S. Senate has passed a 10 percent by 2020 national renewable electricity standard three times since 2002—most recently in June 2005.

Momentum continues to grow for a strong national standard. A 20 percent by 2020 standard was introduced in the House of Representatives in February 2007, and a 15 percent by 2020 standard is under consideration in the Senate.¹ Using a model from the Energy Information Administration (EIA), the Union of Concerned Scientists (UCS) examined the long-term effects that a national 20 percent by 2020 standard would have on the economy and the environment, under two different scenarios: an “EIA case,” which assumes no changes to the model, and a “UCS case,” which makes several modifications (described in the “Modeling Methods” on the back page). Our analysis found that, under

20 Percent by 2020: How North Dakota Benefits from a National Renewable Electricity Standard

Job Creation

3,680 new jobs from renewable energy development

Economic Development

\$617 million in new capital investment, \$46 million in income to farmers and rural landowners, and \$10 million in new local tax revenues

Consumer Savings

\$22 million in lower electricity and natural gas bills by 2020 (growing to \$47 million by 2030)

Climate Solutions

Reductions in U.S. global warming pollution equal to taking 36.4 million cars off the road

both cases, a national standard would provide significant benefits for North Dakota. The findings from the UCS case 20 percent national standard are presented below, followed by findings for the EIA case 20 percent standard.

CONSUMER SAVINGS

Under a 20 percent national standard, consumers in all sectors of North Dakota's economy would experience a reduction in both their cumulative electricity and natural gas costs compared with business as usual. Cumulative savings would reach \$22 million by 2020 and, by 2030, would grow to \$47 million (\$15 million for households, \$12 million for commercial customers, and \$21 million for industrial customers).²

The national renewable standard saves consumers money by reducing the demand for fossil fuels and creating new competitors in the U.S. energy market. As a result, energy companies are limit-

ed in their ability to raise fossil fuel prices in the future. Compared with business as usual, natural gas (and coal) therefore cost less for electricity generation, as well as for other purposes, benefiting both electricity consumers and natural gas consumers.

JOBS AND OTHER BENEFITS TO LOCAL ECONOMIES

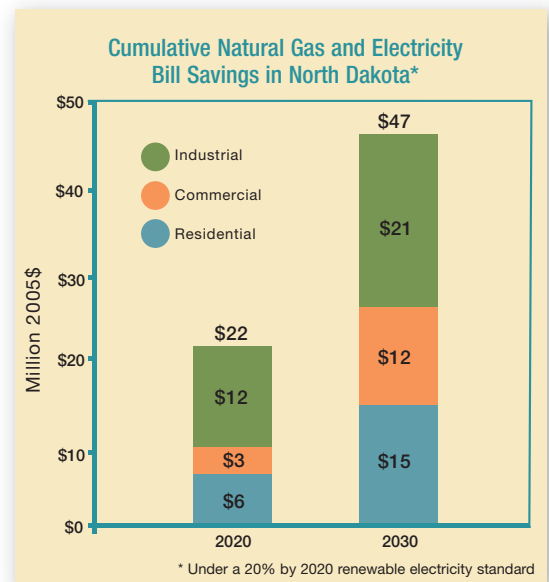
A renewable electricity standard would benefit North Dakota's economy in other significant ways. For example, dollars invested in clean energy go toward high-quality jobs in manufacturing and construction, as well as jobs in operations, maintenance, finance, sales, shipping, and other industries. Jobs are also created when these workers spend their income on goods and services and when consumer energy bill savings are spent in the local economy.

By 2020, the total new renewable energy development needed to meet a 20 percent national standard would generate 3,680 new jobs in North Dakota. State level policies—primarily renewable electricity standards—would make an important contribution toward this job creation as well

as spur other economic benefits. Excluding the development from full compliance with state standards and including the effects of displacing fossil fuel generation, the national standard would result in a net benefit of more than 2,900 jobs. These additional jobs would generate an additional \$95 million in state income and \$148 million in gross state product.

Renewable energy technologies tend to create more jobs than fossil fuel technologies because a larger share of the expenditures for renewable energy is spent on manufacturing equipment, installation, and maintenance, all of which are typically more labor intensive than extracting and transporting fossil fuels. Renewable energy facilities also do not need to export cash to import fuel from other states, regions, or countries (with bioenergy, money is spent on locally produced fuel), keeping money circulating in the local economy.

Many of the new jobs would be located in rural areas where the renewable energy generating facilities would be sited. However, a national



standard can also provide the opportunity to manufacture and assemble components for renewable energy facilities. For example, based on an analysis by the Renewable Energy Policy Project completed for this study, we found that, in North Dakota, a 20 percent national standard would create 650 new long-term jobs in manufacturing components for wind turbines, solar photovoltaic panels and films, biomass facilities, and geothermal power plants. Developing a strong manufacturing base can also create promising export opportunities, given the rapidly growing commitment of the rest of the world to expand renewable energy use.

In addition to creating jobs, a 20 percent by 2020 national standard would provide an important boost to North Dakota's economy in the following ways:

- \$617 million in new capital investment in renewable energy
- \$46 million in new income for farmers and rural landowners who produce biomass energy and/or lease their land to wind developers
- \$10 million in new property tax revenues to help local communities pay for schools and vital public services

Wind Brings Clean Energy and Jobs to North Dakota

Despite being the windiest state, North Dakota has only recently begun to enjoy a boom in wind power development. In March 2007 Minnkota Power Cooperative announced plans to purchase 99 MW of electricity from a 159 MW wind power facility near Langdon. In addition to providing long-term lease income for rural landowners, the facility will create 10 permanent operations and maintenance jobs when completed, and generate about 10 percent of Minnkota's power supply. In May, Xcel Energy—Minnesota's largest utility—added to the North Dakota wind power rush by announcing plans to buy or build 200 MW of capacity in the state by 2011.

North Dakota has already been reaping the benefits from wind energy manufacturing jobs. Denmark-based LM Glasfiber opened a fiberglass blade production facility in Grand Forks in 1999 with about 60 workers. Thanks to strong growth in the wind industry, the company has continued to expand and is currently increasing its workforce by 60 percent, up to 720 employees. As a result, LM Glasfiber has displaced a potato processor as the city's largest employer.

ENERGY DIVERSITY

In 2005, 95 percent of North Dakota's electricity was generated from a single source: coal. This heavy reliance on fossil fuel makes the state's consumers and economy vulnerable to potential energy supply shortages and interruptions, as well as price spikes and price manipulation. Increasing the use of renewable

Dollars invested in clean energy go toward high-quality jobs in manufacturing and construction, as well as jobs in operations, maintenance, finance, sales, shipping, and other industries.

energy helps diversify the energy mix by meeting a larger portion of North Dakota's power demand and reducing the projected growth in coal and natural gas use for electricity. Our analysis found that under a 20 percent standard, North Dakota would increase its total homegrown renewable power generating capacity to 1,210 megawatts (MW) by 2020. This development would come from the state's wind and bioenergy

resources, producing enough electricity to serve the needs of 850,000 typical homes, and supply 42 percent of state electricity sales.

A SMART CLIMATE SOLUTION

If left unchecked, heat-trapping emissions such as carbon dioxide (CO₂) are expected to cause dangerous global warming that threatens our health and environment. Increased renewable energy use would provide an affordable global warming solution by reducing fossil fuel demand, thereby reducing CO₂ emissions from the largest U.S. source: power plants.

The 20 percent standard would reduce power plant CO₂ emissions nationally by 223 million metric tons per year by 2020 (8 percent below business as usual and a 63 percent reduction in the EIA's projected growth of power plant CO₂ emissions from today's levels), equivalent to taking 36.4 million cars off the road.

In addition to cutting CO₂ emissions, lower fossil fuel demand would reduce other harmful air pollutants from power plants such as mercury and sulfur dioxide, and would limit the damage done to our water and

land by fossil fuel extraction and transport, conserving natural resources for future generations.

BENEFITS UNDER THE EIA CASE

The EIA case 20 percent standard, which has higher cost and worse performance



Photo: Warren Gretz, NREL

assumptions for most renewable energy technologies, would still provide significant—and in some instances, greater—consumer and environmental benefits for North Dakota (see table). For example, the EIA's more optimistic cost projections for biomass technologies results in additional biomass development (and its associated benefits) compared with the UCS case. In addition, because the EIA projects more coal development in its reference case forecast, the EIA case 20 percent standard displaces a larger amount of coal generation, leading to more CO₂ emission reductions compared with the UCS case.

A CLEANER, SAFER ENERGY FUTURE

A national renewable electricity standard would make North Dakota's—and the nation's—energy supply more reliable and secure. It would use local energy sources to create high-skilled jobs in the state, improve local economies, put energy dollars back into the pockets of North Dakota's



Photo: LM Glasfiber

Wind energy creates high-quality manufacturing jobs in North Dakota for parts like blades, towers, and turbines.

consumers, and reduce the dangers of global warming and air pollution. Using existing technologies, we can shift away from our dependence on an unstable, dirty fossil fuel supply, and toward a future built on clean, renewable energy. We have a responsibility and a compelling financial interest to make the renewable electricity standard a cornerstone of America's national energy policy.



Photo: ©photos.com

Comparison of North Dakota Benefits, UCS and EIA Cases

	20% by 2020 UCS case	20% by 2020 EIA case
New capital investment in renewable energy	\$617 million	\$499 million
Consumer energy bill savings (through 2030)	\$47 million	\$40 million
Biomass energy payments	\$39 million	\$50 million
Property tax revenues	\$10 million	\$18 million
Wind power land lease payments	\$6 million	\$8 million
Annual CO ₂ emission savings from U.S. power plants	223 million metric tons	310 million metric tons

MODELING METHODS

UCS conducted its analysis using the EIA's National Energy Modeling System. We examined the economic and environmental benefits under a 20 percent by 2020 standard using two scenarios. The "EIA case" assumes no changes to EIA's model, while the "UCS case":

- uses costs and performance assumptions for wind, coal, natural gas, and nuclear technology developed by Black & Veatch (a global engineering, consulting, and construction company) as part of a broad stakeholder process for the U.S. Department of Energy's (DOE) National Wind Collaborative;
- uses costs and performance assumptions for solar, geothermal, and biomass technologies that are more in line with projections by the DOE's Office of Energy Efficiency and Renewable Energy, and National Renewable Energy Laboratory; and
- takes into account recent cost increases from actual conventional and renewable energy projects.

We also evaluated the contribution made by states with renewable electricity standards that fully achieve their annual targets. (The EIA assumed that states will only achieve a fraction of their annual targets.)

ENDNOTES

- ¹ H.R. 969, introduced by Representatives Tom Udall (D-NM), Todd Platts (R-PA), and 13 original co-sponsors.
² Unless otherwise noted, results are presented in 2005 dollars using a 7 percent real discount rate.

A fully referenced version of this fact sheet is available online at www.ucsusa.org/clean_energy.

The Union of Concerned Scientists is the leading science-based nonprofit organization working for a healthy environment and a safer world.



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

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

West Coast Office
 2397 Shattuck Ave., Suite 203
 Berkeley, CA 94704-1567
 Phone: (510) 843-1872
 Fax: (510) 843-3785



Printed on recycled paper using vegetable-based inks
 © UCS July 2007