



Union of
Concerned
Scientists

FACT SHEET

A Bright Future for the Heartland



POWERING ILLINOIS'S ECONOMY WITH CLEAN ENERGY

As in most Midwest states, coal dominates Illinois's power supply, posing serious risks to public health and the environment and leaving families and businesses vulnerable to price hikes. And like the rest of the Midwest, Illinois has struggled to fully rebound from the recent deep recession.

Fortunately, practical and affordable ways are available to help revitalize the state's economy and ensure a clean, safe, and reliable power supply. Energy efficiency technologies and renewable resources such as wind, solar, and bio-power offer a responsible path away from the state's overreliance on polluting fossil fuels to generate electricity.

Illinois has already taken important steps to promote these solutions. However, the Prairie State must go further to create a clean and sustainable energy economy and reduce the urgent threat of global warming. Doing

so would deliver many important economic and environmental benefits, such as keeping Illinois competitive in the growing clean energy industry.

In 2009, the Midwestern Governors Association—a collaboration of 10 states (including Illinois) working on key public policy issues—released the *Midwestern Energy Security and Climate Stewardship Roadmap*. The Energy Roadmap's policy recommendations outline a path to a clean energy economy that entails maximizing local resources while reducing global warming pollution.

The Energy Roadmap recommends producing 30 percent of the Midwest's power supply from renewable resources by 2030, and investing in energy efficiency technologies to reduce power consumption at least 2 percent annually by 2015 and thereafter. The Union of Concerned Scientists (UCS) performed an analysis of these two

recommendations, which we modeled as a renewable electricity standard (RES) and an energy efficiency resource standard (EERS).

The RES and EERS have proven to be effective and popular tools for advancing renewable energy and energy efficiency. As of April 2011, eight Midwest states had adopted an RES (among 29 states nationwide, plus Washington, DC). Five of these states also have an EERS (among 26 states nationwide).

In 2007, Illinois adopted an RES that requires

The Benefits of a Clean Energy Economy for Illinois by 2030



Job Creation:

Nearly 8,400 net new jobs from deploying renewable energy and energy efficiency technologies

Economic Development:

Nearly \$4.5 billion in new capital investment, \$130 million in new income for farmers and rural landowners, and \$550 million in new local tax revenues

Consumer Savings:

\$4.7 billion in lower electricity and natural gas bills by 2030 (\$79 for a typical family)

Diversified Energy Mix:

8,800 megawatts of capacity for generating electricity from non-hydro renewable resources (up from about 2,200 megawatts in 2010)

Climate Solutions:

Across the Midwest, reductions in global warming pollution from power plants equal to the annual emissions from 30 typical new coal plants

25 percent of the state's power supply to come from renewable resources by 2025. Illinois also has an EERS that matches the efficiency goal in the Energy Roadmap.

We used a modified version of the U.S. Department of Energy's (DOE's) National Energy Modeling System (NEMS) to examine the long-term impact on Illinois and the entire Midwest of achieving the Energy Roadmap targets. We modeled two policy scenarios, which we call our *core policy case* and *alternative technology pathway*. The two scenarios differ only in that the core policy case includes



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more pessimistic assumptions about the technology and costs of biopower than the DOE assumes in the NEMS model, to reflect the significant uncertainties and constraints facing biomass development today and into the future. We compared our two scenarios with an *existing policies case*, or base case, which assumes no new state or federal policies.¹

Overall, our analysis shows that Illinois and the entire Midwest would reap significant economic, consumer, and environmental benefits from achieving the targets in the Energy Roadmap.²

JOB CREATION AND OTHER ECONOMIC DEVELOPMENT BENEFITS

Under our core policy case, for example, we found that investments in clean energy needed to achieve the renewable energy and energy efficiency targets in the Energy Roadmap would create 8,400 new jobs in Illinois by 2030. Those jobs would be on top of those created under Illinois's existing policies, and would span numerous sectors of the state's economy, including manufacturing,

construction, operations, maintenance, agriculture, forestry, finance, and retail. Those investments would also yield \$480 million in new annual income in Illinois by 2030, and \$280 million per year in new gross state product.

Our analysis of changes in employment found that job gains from investments in renewable energy and energy efficiency would far outweigh any job losses from displaced fossil fuel generation. Electricity produced from renewable

resources and gains in energy efficiency typically delivers more jobs than power produced from fossil fuel because a larger share of the money remains in the regional economy and in labor-intensive sectors such as manufacturing, installation, and maintenance. Many of the expenditures required to produce power from coal and natural gas flow to states outside the region, and support fuel extraction and transportation, which are less labor-intensive.

Besides creating jobs, the stronger renewable electricity standard in the Energy Roadmap would provide other important boosts to Illinois's economy by 2030. These economic benefits include:

- \$4.5 billion in new capital investment in renewable energy and energy efficiency
- \$130 million in new income for farmers and rural landowners who produce biomass energy or lease their land to wind developers
- \$550 million in new property tax revenues, which would help communities pay for schools and vital public services³

Wind Power Brings Economic Benefits to Rural Illinois Communities

Home to abundant wind energy resources, a robust electricity transmission network, strong demand for renewable energy from major cities, and regulations promoting the use of renewables, Illinois has established itself as a leader in the Midwest's rush to wind power. Installed wind power capacity in Illinois expanded from 50 megawatts in 2003 to 1,850 megawatts by early 2010.

This development will create \$3.2 billion in direct and indirect economic benefits for local Illinois communities over the lifetime of the projects. Those benefits include the equivalent of 9,968 full-time jobs to build new wind facilities, and some 494 permanent full-time jobs to operate and maintain them (Loomis and Hinman 2010).

Wind projects already provide \$18 million each year in local property taxes in Illinois, and \$8.3 million annually for landowners across the state who lease land for wind development. For instance, when Horizon Wind Energy built the Twin Groves Wind Farm in McLean County, the company signed agreements with more than 100 local property owners who provided sites for wind turbines, road access, and power line easements.

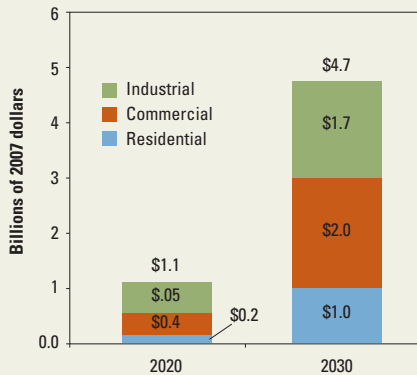
Logan County reaped \$245,000 in zoning and permitting fees from the 29-turbine Rail Splitter Wind Farm, while Stephenson County received more than \$750,000 from the Eco Grove project. Illinois's experience with wind development reveals the central role that the industry can play in bringing prosperity to rural areas.

¹ Existing policies include state-level RESs and EERSs adopted as of March 2010, and the federal renewable energy tax credits and incentives in the American Recovery and Reinvestment Act of 2009. It does not include recent changes in power plant regulations that the U.S. Environmental Protection Agency is using to enforce the Clean Air Act.

² To read our full report, fact sheets on other Midwest states, and a technical appendix describing our modeling approach and assumptions, see www.ucsusa.org/brightfuture.

³ Results are in cumulative 2007 dollars and use a 7 percent real discount rate.

Figure 1. Cumulative Savings on Illinois's Consumer Energy Bills under the Energy Roadmap



CONSUMER SAVINGS

Illinois consumers stand to save on their energy bills if the state implements the renewable energy target in the Energy Roadmap along with the state's EERS. Investments in energy efficiency deliver much of these savings by reducing demand for electricity in homes, businesses, and industry.

Greater reliance on renewable energy and energy efficiency adds to the savings by fostering competition in the regional energy market. That leads to slightly lower and more stable prices for the coal and natural gas used to generate electricity and provide heat for buildings and industrial uses. Annual consumer electricity prices would be 4.4 percent lower, on average, from 2010 to 2030 under the Energy Roadmap targets, and consumer natural gas prices would be 0.8 percent lower.

The savings from reduced energy consumption and lower prices for electricity and fossil fuels would more than offset the costs of investing in renewables and energy efficiency. Cumulative savings on electricity and natural gas bills for Illinois consumers would total \$1.1 billion by 2020, and rise to \$4.7 billion by 2030, with all sectors of the economy sharing in the savings (Figure 1). The typical Illinois family would begin to see small savings

in annual gas and electricity costs in 2011, with savings of \$15 by 2020, and \$79 by 2030. From 2010 to 2030, a typical household would save an average of \$28 on electricity and natural gas bills each year.

DIVERSIFYING THE ELECTRICITY MIX

In 2009, just 1 percent of the electricity generated in Illinois came from renewable resources. The rest of the state's power came primarily from coal, along with nuclear energy and other fossil fuels—with most of the fuel imported from out of state.

Yet the state is rich in untapped renewable energy resources. Illinois has the technical potential to generate more than six times its 2009 electricity demand from renewables—led primarily by wind and bioenergy—although economic and physical barriers will curb some of that potential.

Under the regional renewable energy targets in the Energy Roadmap, Illinois would diversify its coal-dependent mix of power, making its supply more reliable and secure. The state would increase its homegrown generating capacity based on non-hydro renewable resources from some 2,200 megawatts (MW) today to 8,800 MW in 2030, primarily by adding wind power and bio-power. That development represents a nearly 50 percent increase over the renewable energy generation that would occur under existing policies (Figure 2).

Illinois also has a wealth of untapped potential

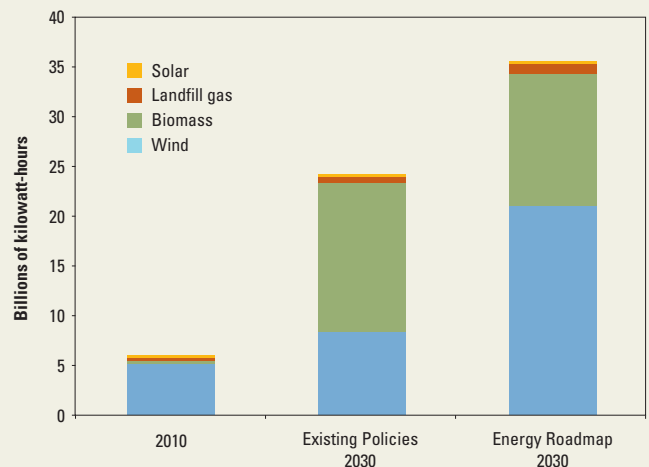
for replacing coal-fired power and diversifying its electricity mix by relying more strongly on energy efficiency technologies. Investing in energy efficiency is one of the quickest and most cost-effective ways to transition to a clean energy economy.

Unlocking this potential would provide ample resources to meet Illinois's existing EERS, which already matches the Energy Roadmap's energy efficiency target. In Illinois, greater reliance on renewable energy and energy efficiency would reduce the need to generate power from coal by more than 30 percent in 2030 compared with existing policies.

ALTERNATIVE TECHNOLOGY PATHWAY CASE

Given its abundant and diverse renewable resources, the Midwest could develop various mixes to meet the Energy Roadmap's targets. In our model, small changes in assumptions about the cost, performance, and siting or supply constraints of each technology affect the mix. In our alternative technology pathway, we assume that some of the significant development constraints facing biomass can be

Figure 2. Use of Renewable Resources to Generate Electricity in Illinois, 2030: Existing Policies vs. Energy Roadmap



overcome, leading to lower cost and better performance of the technology.

Under this alternative technology pathway, Illinois would generate 9 percent more electricity from renewables in 2030 than under the core policy case. This finding primarily reflects the state's potential for co-firing biomass at existing coal plants. Under the alternative technology pathway, 3.5 times more electricity would come from such co-firing by 2030. The amount of electricity generated from wind and other renewable energy resources would be similar under both scenarios.

While the alternative technology pathway alters the mix of renewable resources used to generate electricity, Illinois still achieves the Energy Roadmap targets while reaping consumer savings and economic development similar to those under the core policy case (Table 1). Job creation is somewhat lower than under the core policy case, because the state meets a larger share of the renewable energy target by co-firing biomass at existing coal plants—a less labor-intensive approach than building new renewable energy facilities. However, greater reliance on biomass under the alternative technology pathway puts more money in the pockets of rural landowners from the harvest and sale of biomass products.

RESPONSIBLE ACTION ON CLIMATE CHANGE

If heat-trapping emissions are left unchecked, global warming—which already threatens our health and environment—will worsen. Illinois will see significant consequences in the next few decades, and they will become

more severe as the century progresses (Hayhoe et al. 2009).

Fortunately, renewable energy and energy efficiency are smart and affordable global warming solutions that cut CO₂ emissions by reducing fossil fuel use. Under the core policy case, the Energy Roadmap targets would lower CO₂ emissions from Midwest power plants by 130 million metric tons annually by 2030 (16.7 percent below base-case levels)—equivalent to the annual emissions from 30 typical new coal plants.

THE BOTTOM LINE

As Illinois and other Midwest states search for ways to help revitalize their economies, investing in clean energy is a smart and responsible course. Adopting the Energy Roadmap's goal for renewable energy would spur innovation, create thousands of jobs in big cities and small towns across Illinois, provide much-needed savings on energy bills for families and businesses, and diversify the state's power supply, making it more reliable and secure.

Illinois has already taken important steps toward a clean energy future. However, the Prairie State should go further, increasing its renewable electricity requirement from 25 percent by 2025 to 30 percent by 2030.

State and federal tax credits and other financial incentives, more funding

Table 1. Illinois's Economic Benefits from Meeting the Energy Roadmap Targets: Core Policy Case vs. Alternative Technology Pathway

	Core Policy Case	Alternative Technology Pathway
Savings on Electricity and Natural Gas Bills (cumulative)		
2010–2020	\$1.1 billion	\$1.5 billion
2010–2030	\$4.7 billion	\$4.6 billion
Typical annual household savings, 2030	\$79	\$57
Net Job and Economic Benefits (in 2030)		
Net job creation	8,400	7,000
Income	\$480 million	\$390 million
Gains in gross state product	\$280 million	\$290 million
Other Net Economic Benefits (cumulative 2010–2030)		
New capital investment in renewable energy	\$4.5 billion	\$2.4 billion
Biomass payment	\$80 million	\$550 million
Wind land-lease payments	\$50 million	\$20 million
Property tax revenues	\$550 million	\$280 million

for research and development, stronger energy codes for buildings, and better processes for planning, siting, and approving electricity transmission lines are also needed. By doing its part to promote renewable energy and energy efficiency in the Midwest, Illinois will reap significant economic and environmental benefits today while creating a clean and sustainable energy economy for future generations.

References

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- Loomis, D., and J. Hinman. 2010. *Economic impact: Wind energy development in Illinois*. Normal, IL: Center for Renewable Energy, Illinois State University. Online at <http://renewableenergy.illinoisstate.edu/wind/publications/2010%20FINAL%20NEW%20Economic%20Impact%20Report.pdf>.

The full text of this report is available on the UCS website at www.ucsusa.org/brightfuture.



Union of Concerned Scientists

Citizens and Scientists for Environmental Solutions

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

National Headquarters
Two Brattle Square
Cambridge, MA 02138-3780
Phone: (617) 547-5552
Fax: (617) 864-9405

Washington, DC, Office
1825 K St. NW, Ste. 800
Washington, DC 20006-1232
Phone: (202) 223-6133
Fax: (202) 223-6162

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

Midwest Office
One N. LaSalle St., Ste. 1904
Chicago, IL 60602-4064
Phone: (312) 578-1750
Fax: (312) 578-1751