

DIRECTION

Policy • Advocacy • Business • Finance • Legal • Environment • International

ENERGY DEPARTMENT REPORTS HIGHLIGHT TRENDS OF GROWING U.S. WIND ENERGY INDUSTRY



In 2014, U.S. turbines in distributed applications reached a cumulative installed capacity of more than 906 MW, enough to power more than 168,000 average American homes.

According to two reports released in August by the Energy Department, the United States' wind energy industry continued growing at an impressive rate in 2014, further solidifying America's position as a global leader in wind energy. Wind power is a key component of the president's all-of-the-above energy strategy and Clean Power Plan to reduce climate-changing carbon pollution, diversify our energy economy, and boost America's economic competitiveness by bringing innovative technologies online. With rapidly increasing wind energy generation, fast-growing demand, and steadily decreasing wind energy prices — the lowest ever seen in the U.S. — the U.S. wind energy market remains strong.

“With declining costs and continued technological development, these reports demonstrate that wind power is a reliable source of clean, renewable energy for American homes and businesses,” said Energy Secretary Ernest Moniz. “Through continued investments and the help of stable policies, we're confident that wind power will keep playing a major role in creating jobs and shaping America's clean energy future.”

WIND TECHNOLOGIES MARKET REPORT

According to the 2014 Wind Technologies Market Report released by the Energy Department and its Lawrence Berkeley National Laboratory, total installed

wind power capacity in the U.S. grew at a rate of 8 percent in 2014 and now stands at nearly 66 GW, which ranks second in the world and meets 4.9 percent of end-use electricity demand in an average year. The U.S. was the global leader in total wind energy production in 2014. The report also finds that wind energy prices are at an all-time low and are competitive with wholesale power prices and traditional power sources across many areas of the U.S.

A new trend identified by the report shows utility-scale turbines with larger rotors designed for lower wind speeds have been increasingly deployed across the country in 2014. The findings also suggested that the success of the U.S. wind industry has had a ripple effect on the Amer-

ican economy, supporting 73,000 jobs related to development, siting, manufacturing, transportation, and other industries — an increase of 22,500 jobs from 2013 to 2014.

DISTRIBUTED WIND MARKET REPORT

In total, U.S. turbines in distributed applications reached a cumulative installed capacity of more than 906 MW — enough to power more than 168,000 average American homes — according to the 2014 Distributed Wind Market Report, also released recently by the Energy Department and its Pacific Northwest National Laboratory. This capacity comes from roughly 74,000 turbines installed across all 50 states, Puerto Rico, and the U.S. Virgin Islands. Compared with traditional, cen-

tralized power plants, distributed wind energy installations supply power directly to the local grid near homes, farms, businesses, and communities. Turbines used in these applications can range in size from a few hundred watts to multi-megawatts, and can help power remote, off-grid homes and farms as well as local schools and manufacturing facilities.

As shown in the report, America's distributed wind energy industry supports a growing domestic industrial base. U.S.-based small wind turbine manufacturers claimed another strong year of exports to countries across the globe, accounting for nearly 80 percent of U.S.-based manufacturers' sales. ↘

— Source: Department of Energy

AMERICAN WIND POWER CONTINUES TO RAMP UP IN 2015

With 1,661 MW of newly installed wind turbines coming online during the second quarter of 2015 and more than 13,600 MW under construction, American wind power continues to increase its contribution to the U.S. electric power grid. The approval in May of Florida's first purchase of wind energy from a wind project in Oklahoma added to the growing trend of southeastern states purchasing wind power, as did the recent announcement of the first utility-scale wind farm to be built in North Carolina.

Building on that momentum, Congress also took a step in the right direction when the U.S. Senate Finance Committee voted 23-3 to extend the primary federal tax incentives for growing renewable energy as part of a larger tax policy extension bill.

"With a near-record amount of wind capacity under construction, this looks to be a strong year for American wind power," said Tom Kiernan, CEO of the American Wind Energy Association (AWEA). "However, to create longer term stability for the industry, the full Senate and the House of Representatives must move quickly to extend the PTC and ITC. The overwhelming bipartisan vote by the Senate Finance Committee to extend the PTC and ITC is good news for the 73,000 Americans employed by the wind power industry."

The federal renewable energy Production Tax Credit (PTC), which has the option to be taken as an Investment Tax Credit (ITC) instead, is the primary federal tax incentive for wind energy. This incentive has helped drive more than \$100 billion in private investment in the U.S. since 2008 and has been instrumental in allowing the industry to lower costs by more than 50 percent in the last five years.

AWEA's Second Quarter 2015 Market Report released shows 1,994 MW were installed during the first half of 2015. While that figure more than doubles installations during the same time period last year, it is still well below the pace set in 2012 when the U.S. industry installed more than 2,900 MW in the first half of the year and eventually provided 42 percent of all new U.S. electric generating capacity at year's end.

Looking forward, more than 100 wind projects are under construction in 24 states, representing more than 13,600 MW of total wind capacity and over \$20 billion worth of private investment. The majority of new wind construction activity is in Texas with Oklahoma, Kansas, Iowa, and North Dakota also benefiting from large amounts of new investment.

"This was the strongest second quarter ever for wind, and we continue to see robust activity in the industry," said Hannah Hunt, research analyst for AWEA. "How-



ever, uncertainty around federal tax policy clouds the outlook for new growth and could result in the industry being forced off another cliff.”

There are now 67,870 MW of installed wind capacity in the U.S. and over 49,000 wind turbines online. Texas continues to lead the nation with over 15,000 MW of installed wind capacity, and California now has over 6,000 MW of installed capacity.

NEW TRENDS AS INDUSTRY GROWS

The Florida-based utility Gulf Power and the Arkansas Electric Cooperative Corp. signed power purchase agreements (PPA) for 180 MW and 108 MW of wind in the second quarter, respectively, building on the trend of Southeastern utilities choosing to purchase wind energy.

These announcements are paired with recent news in July that construction will begin on the first commercial-scale wind farm in North Carolina. At 208 MW, the announced project will be far larger than any other in the Southeast, and the first utility-scale project in the region since 2004. Once online, it will bring the total number of states with utility-scale wind projects to 40. Technological advances, primarily the use of taller wind turbine towers and longer blades to reach higher quality wind resources, are opening up all regions of the country to wind project development. The Southeast has long been a center of wind industry manufacturing, and these recent developments bring even more benefits to the region.

In total, utilities signed over 800 MW of new PPAs for wind power in the second quarter of 2015, building on the roughly 12,000 MW of power purchase agreements signed since the beginning of 2013.

Successful U.S. companies and other non-traditional purchasers are also increasingly turning to wind energy as a source of clean, stably priced energy. Amazon Web Services (AWS) will purchase the output of the recently announced North Carolina wind project. In announcing the agreement, Jerry Hunter, vice president of Infrastructure at Amazon, said that the company encourages policymakers to “extend the tax incentives” for renewable energy projects.

“This agreement, and those previously in place, puts AWS on track to surpass our goal of 40 percent renewable energy globally by the end of 2016,” Hunter said. “We’re far from being done. We’ll continue pursuing projects that deliver clean energy to the various energy grids that serve AWS data centers, we’ll continue working with our power providers to increase their renewable energy quotient, and we’ll continue to strongly encourage our partners in government to extend the tax incentives that make it more viable for renewable projects to get off the ground.”

The second quarter also saw the commissioning of two utility-scale wind projects with corporate purchaser investment. Both a 98-MW wind farm in Illinois owned by IKEA and a 211 MW Texas wind farm invested in by Mars, Inc., are now online and will be providing low-cost wind power to satisfy the companies’ high energy demands.

Facebook also made news in the second quarter when it announced its new data center in Texas would purchase the output of a 200-MW wind plant.

“[The data center] will be powered by 100-percent renewable energy thanks to the 200 MW of new wind energy we helped bring to the Texas grid as part of this deal,” Tom Furlong, vice president of Infrastructure for Facebook, said. “Thanks to our continued focus on efficiency and our investments in renewables in recent years, the carbon impact of one person’s use of Facebook for an entire year is the same as the carbon impact of a medium latte.”

Hewlett Packard also recently announced that it plans to power its Texas data centers with wind power, signing a 112-MW PPA for the energy output from a planned wind farm in the state.

These companies and traditional utilities have explained that they are attracted by wind energy’s unique lack of fuel cost, which builds a more balanced energy portfolio that protects against increases in the price of other fuels. ↵

—Source: AWEA

GERMANY BREAKS A RENEWABLE ENERGY RECORD

Europe's industrial powerhouse shows how other fossil-fuel nations can kick their coal habit

Germany's transition from coal- and oil-fired power to carbon-free electricity hit a new milestone on July 25 when solar, wind, and other sources of renewable energy met 78 percent of the day's energy demand.

That beat the old record of 74 percent made in May 2014, according to Craig Morris, a journalist who has covered Germany's energy scene for more than a decade.

Helping set the record was an unusual weather pattern that brought heavy winds where most of the nation's wind turbines are located. As the turbines generated more power, utilities ramped down coal- and gas-fired power plants.



Christian Charisius/Reuters

Germany gets much of its renewable energy from wind farms like this one in the North Sea.

JANICKI
INDUSTRIES

Delivering Value with
Wind Energy Tooling

High Quality
Price Competitive
On-time Delivery

► Fixtures • Molds • Blades ► Precision 5-Axis Machining ► Composite Fabrication ► Engineering Services

www.janicki.com 360.856.5143

But Morris found the power mix a few days earlier even more encouraging. During the night of July 22, even with darkness reducing solar output to zero and no big winds in the forecast, renewables — wind, biomass, and hydropower — generated nearly 25 percent of Germany's electricity.

Morris found the energy data for both dates using an online tool sponsored by the Germany-based Fraunhofer Institute for Solar Energy Systems.

Germany's experience shows that solar and wind can keep the lights on in a highly industrialized nation, according to Osha Gray Davidson, author of *Clean Break*, a book about Germany's transition to carbon-free energy.

"The key indicator is percentage of electricity produced by different sources — 28 percent of Ger-

many's electricity comes from renewables annually, which is pretty amazing for a large industrialized country," Davidson said.

According to Davidson, Germany is a model for the United States, "because manufacturing accounts for much more of the German economy than the American economy, and they have 80 million people — much larger than a country like Denmark, which gets more of its power from renewables but has a much smaller industrial base and has a population of five-and-a-half million people."

The U.S. currently gets approximately 10 percent of its electricity from renewable sources, according to the U.S. Energy Information Administration. ↗

— Source: *TakePart*

OFFICIALS HIGHLIGHT NEED FOR STABLE POLICY TO CONTINUE GROWING WIND ENERGY



Department of Energy

Judith Gap Wind Farm

Secretary of Energy Ernest Moniz emphasized the need for stable policy for wind energy as the U.S. Department of Energy (DOE) released data showing that the cost of wind energy has fallen by nearly two-thirds over the last six years.

"With declining costs and con-

tinued technological development, these reports demonstrate that wind power is a reliable source of clean, renewable energy for American homes and businesses," Moniz said in a release issued by the DOE about its 2014 Wind Technologies Market Report. "Through continued

investments and the help of stable policies, we're confident that wind power will keep playing a major role in creating jobs and shaping America's clean energy future."

American wind power has become increasingly affordable due to the success of performance-based renewable energy tax incentives in driving U.S. manufacturing and American ingenuity. The cost of wind energy has fallen 65.5 percent since 2009 according to the DOE report, which also says the U.S. is the global leader in total wind energy production with enough to power the equivalent of 18 million average American homes.

"While this report is good news, extending the Production Tax Credit and Investment Tax Credit remains critical for keeping Americans at work, reducing the cost of wind energy, and continuing to scale up this homegrown resource through the end of this decade," said Tom Kirnan, CEO of the American Wind Energy Association (AWEA). "Wind energy is increasingly cost-compet-

itive in several parts of the U.S., but we need stable, predictable policy to continue bringing this consumer benefit to every corner of the country. Policy stability will keep this American economic success story going.”

American wind power supports 73,000 direct jobs in 50 states with nearly 20,000 well-paid manufacturing jobs. Federal policy plays a critical role in the wind industry’s decisions to make long-term investments in U.S. manufacturing facilities, research and development, and worker training to create the modern American wind industry. An extension of the Production Tax Credit (PTC) and Investment Tax Credit (ITC) enables the private investment needed for American wind power to make the further gains in productivity needed to achieve cost competitiveness with more traditional sources of electricity. That would allow for American homes and businesses to have greater access to reliable, stably priced, non-polluting, and homegrown wind energy for decades to come.

However, near-term uncertainty about the PTC and ITC puts those investments and the gains they have achieved at risk. The U.S. wind industry lost nearly 30,000 well-paying jobs the last time Congress did not provide wind power with policy stability, pushing the industry off an economic cliff and causing wind installations to drop 92 percent the following year.

According to the DOE’s recent Wind Vision report, growing wind energy to 20 percent of the U.S. electricity mix could create 380,000 jobs. Wind Vision also says wind could support 600,000 jobs by supplying 35 percent by 2050, which would result in cumulative savings on consumer electric bills of \$149 billion. ↴

— Source: AWEA

NREL REPORT EXAMINES ENERGY USE IN CITIES AND PROPOSES NEXT STEPS FOR ENERGY INNOVATION

What U.S. cities are doing to reduce their energy use is outlined in a new report from the Energy Department’s National Renewable Energy Laboratory (NREL) that sets the stage for broader discussion and analysis. Given increasing urbanization and their large energy footprint, cities are a prime focal point for establishing a clean energy future.

The report, “City-Level Energy Decision Making: Data Use in Energy Planning, Implementation, and Evaluation in U.S. Cities,” analyzes and presents information learned from a sample of 20 cities across the United States from Los Angeles to Boston, including a diverse sample of population size, utility type, region, annual greenhouse gas reduction targets, vehicle use, and median household income.

“City-level practitioners are doing inspiring energy-related work and are hungry for resources and tools to help them,” NREL lead author Alexandra Aznar said. “This paper provides a snapshot of the kinds of energy-related actions cities are taking as well as the challenges they face. The results confirm the need for many of the tools the Cities Leading through Energy Analysis and Planning (Cities-LEAP) project is developing.”

The report compares climate, sustainability, and energy plans to better understand how cities are taking energy-related actions and measuring their impacts. Some common energy-related goals focus on reducing city-wide carbon emissions, improving energy efficiency across sectors, increasing renewable energy, and increasing biking and walking.

The publication also evaluates the relationship between city goals, actions, metrics, and data and provides suggestions for cities to make the best use of the energy planning tools available. Next steps for cities are outlined, including how cities can set more strategic energy goals, prioritize actions, and lead clean energy innovation. Along with reinforcing the need for clean energy planning and evaluation, recommendations include:

- Tailoring energy-related actions and goals to city characteristics, including socioeconomics, geography, and built environment
- Understanding the cost-effectiveness of specific actions
- Integrating energy considerations into all planning processes (capital improvement plans, comprehensive plans, etc.)

This report is part of the Cities-LEAP project, which aims to deliver energy data and analysis that enables cities to make clean energy decisions using strategic energy analysis. It was funded by the Energy Department’s Office of Energy Efficiency and Renewable Energy. ↴

—Source: NREL