

**ENERGY & ENVIRONMENT**

# Wind Power Surpasses Hydroelectric in a Crucial Measure

By DIANE CARDWELL FEB. 9, 2017

The wind industry crossed an important threshold in the United States last year, exceeding the generating capacity of hydroelectric power for the first time, according to the main industry trade group, the American Wind Energy Association.

The nation's fleet of dams has long stood as the top renewable energy source, but there has been little market interest in building more big hydroelectric generating stations. In the meantime, wind has rapidly expanded — more than tripling in capacity since 2008 — with many more installations on the way.

## An Important Asterisk

The comparison here is limited, measuring the maximum amount of power that generating stations are rated to produce — a threshold few, if any, ever meet. According to the Energy Information Administration, conventional hydroelectric generating capacity stood at 78,956 megawatts in 2015, while wind, the industry group says, reached 82,183 megawatts last year, about enough to run 24 million average American homes. (The hydroelectric figure does not include pumped storage, in which water pumped to an elevated reservoir can be released through a turbine to generate electricity when needed.)

But hydroelectric power could still lead in terms of actual production: According to the Energy Information Administration's most recent annual electric power report, hydroelectric edged out wind in terms of power sent to the grid by roughly 30 percent in 2015, though both forms trailed fossil fuels and nuclear power by wide margins.

## The Question of Efficiency

Any power plant's potential output can be diminished by a number of factors, including market conditions that render its electricity uneconomical, shutdowns to fix or maintain equipment, orders to curtail unneeded production from system operators and fuel shortages. This is particularly the case for renewable energy sources, whose fuel depends on ever-shifting weather patterns to keep clouds from shading the sun, fill rivers with water and make the winds blow.

Among generators that do not primarily rely on fossil fuels, nuclear plants are the most efficient — they ran at 92.3 percent of their capacity in 2015 — followed by hydroelectric at 35.8 percent that year and wind at 32.2 percent, according to the Energy Information Administration. (Those figures reflect the energy actually generated as a percentage of what a plant could have produced at full, continuous operation during the same period.)

Technological advances in wind design, including taller turbines with longer blades that can harvest energy from a greater variety of winds, are leading to increased efficiency. According to the Department of Energy, projects built in 2014, for instance, ran at 41.2 percent of their capacity the next year.

## The Role of Incentives

The main fuel driving the robust spread of wind farms across the country — with a dense cluster sweeping up from Texas through the Great Plains — has been a combination of federal tax incentives and state mandates requiring utilities to buy renewable energy as part of their strategies to reduce carbon dioxide emissions to stem climate change.

The federal tax incentive favored by the industry, the production tax credit, was worth 2.3 cents a kilowatt-hour of electricity sent to the grid by projects that began construction in 2015 and 2016, but it is scheduled to phase out by the end of 2019. (In 2015, the average home consumed about 900 kilowatt-hours of electricity a month.) As long as that schedule remains, industry executives say, they should be able to meet their goal of supplying 10 percent of the nation's electricity by 2020, more than twice the share they accounted for in 2015.

There is, of course, no guarantee that Congress will maintain the tax credit as planned, or that other potential changes to the tax system won't make the economics of wind less favorable.

## A Job Creator

Although the new administration appears far less focused on making carbon dioxide reductions a priority in its energy policy, wind executives say their industry can help reach some of President Trump's other goals. Those include building new infrastructure — like, say, transmission lines to carry wind power from where it's made to where it's needed — and bolstering manufacturing and creating jobs, especially in rural areas.

According to the Department of Energy, the wind industry now employs almost 102,000 workers, up 32 percent from 2015, while the Department of Labor projects wind service technician as the nation's fastest-growing occupation over the next decade.

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