



Wind turbines in distributed applications in all 50 states, Puerto Rico, Guam, and the U.S. Virgin Islands provide electricity for on-site consumption or for their local grids. Distributed wind is not defined by turbine or project size, but by a project's location relative to its end use and location on the grid system. This 1.5-megawatt (MW) turbine is one of several that power a Ball Corporation manufacturing facility in Ohio. *Photo Credit: Hank Doster / One Energy Enterprises LLC*

2018 Distributed Wind Market Report Overview

Part of an annual series, the 2018 Distributed Wind Market Report provides market research, data, and analysis to help interested parties, policymakers, and industry understand the issues unique to distributed wind in the United States.

Large Turbines Dominate Capacity Additions

Cumulative U.S. distributed wind capacity now stands at over 1,100 MW. Projects using turbines greater than 100 kilowatts (kW) in size continued to dominate distributed wind capacity additions, accounting for 49 MW of the 50.5 MW distributed wind capacity installed in 2018. The 21 MW of distributed wind that Green Development, LLC added to its portfolio in Rhode Island in 2018 accounts for almost half of this capacity. These installations are part of the state government's broader drive to make the Ocean State a renewable energy leader.

Small Wind Poised for Growth

While small wind (up through 100 kW) deployment in 2018 remained flat compared to 2017 at 1.5 MW of capacity, potential growth is on the horizon. United Wind, a wind leasing company, has partnered with both Clif Bar to bring distributed wind to its network of organic farmers and Smithfield Foods, Inc. to power dozens of hog farms in Colorado. The first commercial installation of the new Bergey Excel 15 turbine, which was developed in partnership with the U.S. Department of Energy's Competitiveness Improvement Project, was completed in February 2019. The turbine's optimized design brings next-generation small wind technology to the market.

Distributed Wind Contributes to Hybrid Systems

Distributed energy resources, such as wind, contribute energy generation to microgrids, hybrid energy systems, and distribution networks. For example, in 2018, Juhl Energy Development Inc. brought a solar-wind hybrid project online in Minnesota that includes a 1.7-MW General Electric (GE) wind turbine and 500 kW of solar PV combined through GE's Wind Integrated Solar Energy technology platform. The energy produced will be distributed over local Lake Region Electric Cooperative power lines and help provide rate stability for the entire cooperative membership. Juhl Energy has proposed the installation of two additional hybrid systems in Wisconsin.

Turbines for Distributed Wind Getting Bigger

Distributed wind projects, both behind the customer meter and on the local distribution grid, provide electricity for a variety of customers. More customers are using large-scale turbines (greater than 1 MW), and use of mid-size turbines (101 kW to 1 MW) is becoming less common. This may be partially due to the limited number of commercially available mid-size turbines.

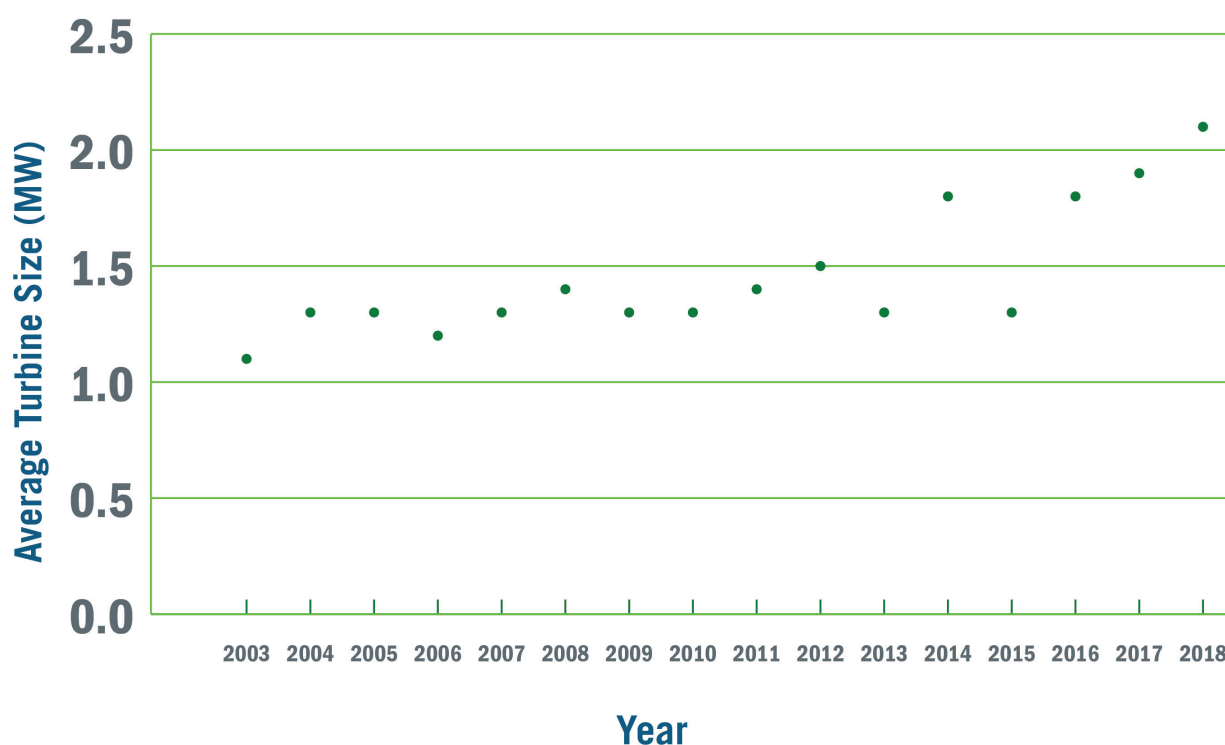
As a result, the average nameplate capacity of turbines greater than 100 kW in distributed wind projects has increased over the years.

In 2003, the average turbine capacity used in distributed wind projects with turbines greater than 100 kW in size was 1.1 MW. In 2018, the average capacity size was almost double that—2.1 MW. This trend mirrors the increase in turbine capacity size used for all land-based wind projects.

Examples of single-turbine distributed wind projects completed in 2018 include the following:

- One 1.7-MW GE wind turbine owned and operated by Foundation Windpower, LLC, at each of two California Department of Corrections and Rehabilitation facilities.
- One 1.5-MW Vensys wind turbine to power multiple municipal facilities for the town of Otis, Massachusetts.

Average Size of Turbines Greater than 100 kW in Distributed Wind Projects



The average size of turbines greater than 100 kW in distributed wind projects has been on an upward trend since 2003. Years when the average size of the turbines deviated from the trend (e.g., 2013 and 2015) may be attributed to the relatively smaller sample sizes of those years.

The 2018 Distributed Wind Market Report is being prepared by Pacific Northwest National Laboratory with funding from DOE's Wind Energy Technologies Office. The full report will be available at energy.gov/windreport in summer 2019.

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