



The distributed wind market includes wind turbines and projects of many sizes, such as a Pika T701 1.80-kW wind turbine paired with a 2-kW solar array in Kansas, two GE 1.7-MW wind turbines at a Honda transmission plant in Ohio, and six Bergey Excel-S 10-kW wind turbines in Ohio. *Photos from left to right: from Kelsey Kaufman; from Honda.com; from Mark Spears.*

Domestic Market Grows Slower, Exports Increase in 2013

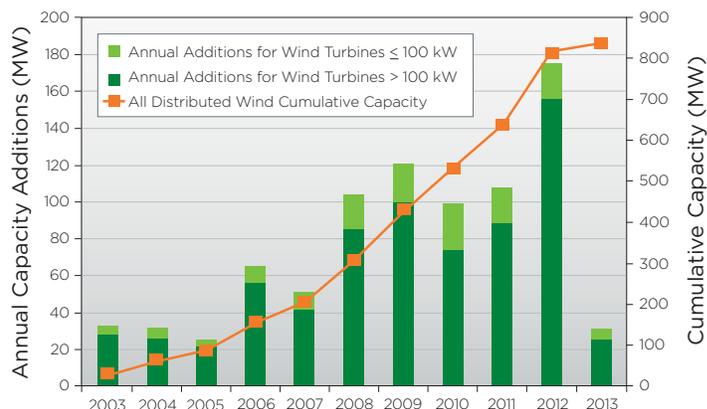
Between 2003 and the end of 2013, a total of 842 megawatts (MW) of wind turbines was installed in distributed applications, reflecting nearly 72,000 units.

In 2013, 30.4 MW of new distributed wind capacity was added, representing nearly 2,700 units, a decline of 83% from 2012. Several factors contributed to this change, including:

- Competitive PV and natural gas prices
- Lack of consumer confidence in turbine reliability
- Phased-out incentives, such as the U.S. Treasury cash grant in-lieu-of a 30% investment tax credit program, and other state and federal level programs
- Reduced funding, such as the U.S. Department of Agriculture’s Rural Energy for America Program (REAP), which funded 25 wind projects with \$1.2 million in grants in 2013, compared to 57 projects and \$2.6 million in 2012.

Of the 30.4 MW, 24.8 MW are from nine projects using turbines above 100 kW in size, for a total of 18 units, in Colorado, Kansas, Ohio, Massachusetts, Alaska, Indiana, North Dakota, and Puerto Rico. The remaining

U.S. Distributed Wind Capacity



5.6 MW were for projects using turbines up through 100 kW in size, representing the balance of the nearly 2,700 units installed in 2013. These small wind turbines were sold by 31 different domestic and foreign manufacturers and refurbishers, including those from Canada, Mexico, Europe, China, and South Africa.

What is Distributed Wind?

Distributed wind energy systems are commonly installed on residential, agricultural, commercial, institutional, and industrial sites connected either physically or virtually on the customer side of the meter (to serve on-site load) or directly to the local distribution or micro grid (to support local grid operations or offset nearby loads). Because the definition is based on a wind project’s location relative to end-use and power-distribution infrastructure, rather than on technology size or project size, the distributed wind market includes wind turbines and projects of many sizes. For example, distributed wind systems can range in size from a 1-kW or smaller off-grid turbine at a remote cabin to a 10-kW turbine at a home to one or several multi-megawatt turbines at a university campus, manufacturing facility, or other large facility.

Quality Assurance of Small and Medium Wind Turbines

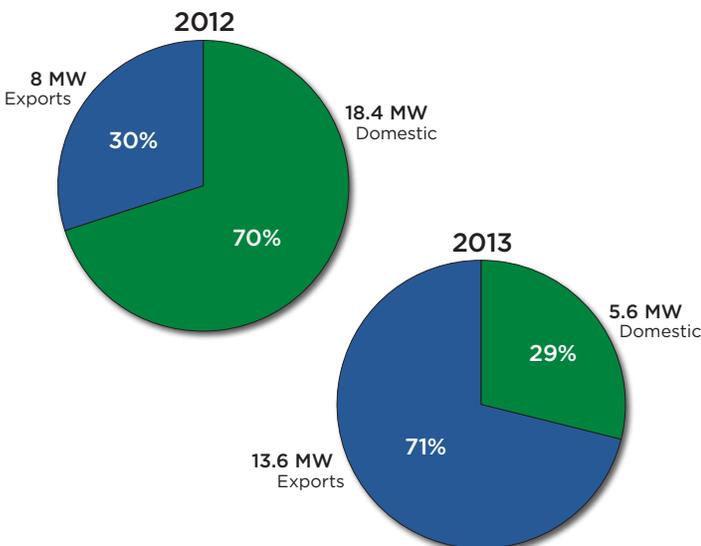
Adoption of distributed wind systems using small and medium-sized wind turbines has been hindered by untested technologies, unverified claims about turbine performance, and high-profile equipment failures. In response to these limitations, DOE's Wind Program has made significant investments to establish a process for small and medium-sized wind turbine certification, including development of technical standards to voluntarily test wind turbine designs against performance and safety criteria; creation of an accredited independent product certification body; development of national and regional wind turbine test facilities; and competitively awarded grants for wind turbine testing. Certification provides manufacturers a process for communicating third-party verified power performance, acoustic signature, and safety information about their products.

The U.S. Department of Energy's Wind Program encourages anyone interested in purchasing small or medium-size wind turbine technology to consider using a certified product, and that public funds only be expended on certified machines. As of April 2014, 13 small wind turbine models are fully certified to the AWEA Standard with power performance ratings, sound level ratings and design and duration test compliance, and 2 medium wind turbine models have certified power performance and acoustics reports from accredited U.S. certification organizations. Certification, or quality assurance, requirements can be adopted by local planning officials, utilities, banks, state energy offices, and federal agencies to help prevent unethical marketing and false claims, thereby ensuring consumer protection and industry credibility.

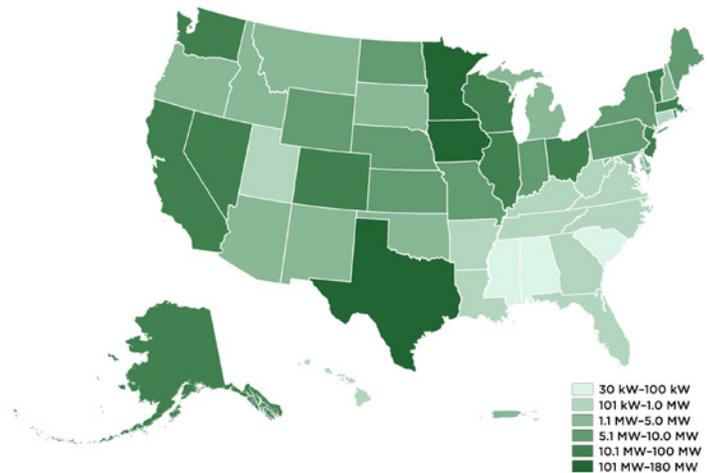
Foreign Markets Grow

U.S. wind turbine manufacturers shifted their focus to international markets in 2013 to compensate for weaker domestic sales. Exports from U.S.-based small wind turbine manufacturers increased 70% from 2012 to an estimated total of 13.6 MW in 2013. U.S. small wind turbines (those up through 100 kW in size) were exported to more than 50 countries in 2013, with top export markets identified as Italy, UK, Germany, Greece, China, Japan, Korea, Mexico, and some countries in Africa.

U.S. Small Wind Turbine Manufacturer Sales



2003–2013 Cumulative U.S. Distributed Wind Capacity



Distributed wind projects have been deployed in all 50 states, Puerto Rico, and the U.S. Virgin Islands

Acknowledgment

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