

DOE Wind Market Report: Minnesota ranks 7th in total installed wind capacity

Minnesota ranked seventh in the nation for cumulative installed wind capacity in 2016 and seventh for capacity installed in 2016, according to the [2016 Wind Technologies Market Report](#) compiled by the U.S. Department of Energy's Lawrence Berkeley National Laboratory. Minnesota was sixth best for wind energy as a percent of total state electricity generation at 17.7%.

Minnesota installed 291 megawatts (MW) of new wind power in 2016, giving it a cumulative capacity of 3,499 MW through the end of 2016, or enough electricity to power nearly 1 million homes. Texas was No. 1 in both 2016 installations (2,611 MW) and cumulative installed capacity (20,320 MW). Wind capacity in Iowa supplied 36.6% of the state's electricity, the highest percentage of all states. Wind provided about 6.2% of the nation's electricity in 2016.

Nationwide, wind power additions continued at a rapid pace in 2016, with 8,203 MW of new capacity added and \$13 billion invested. Supported by favorable tax policy and other drivers, cumulative wind power capacity grew by 11%, bringing the total to 82,143 MW. The United States is the second-leading market in terms of cumulative wind capacity and 2016 annual wind energy production, behind China. The nation's first offshore project (the 30 MW Block Island project in Rhode Island) was also commissioned in 2016.

A few key findings from the 2016 Wind Technologies Market Report include:

- In total, 40 states and Puerto Rico operated utility-scale wind projects. Texas led the nation in capacity with over 20 gigawatts (GW) of wind installed; utility-scale wind came online in North Carolina in early 2017.
- The report also finds that wind energy continues to be sold at attractive prices through power purchase agreements, making this renewable energy source cost-competitive with traditional power sources such as natural gas in many parts of the U.S, especially when wind energy is sold at a fixed price over 20 years.
- In the past year, Iowa and South Dakota produced more than 30% of their electricity from wind, and 12 other states exceeded 10% (Kansas, Oklahoma, North Dakota, Minnesota, Colorado, Vermont, Idaho, Maine, Texas, Oregon, New Mexico, Nebraska).
- The report also shows the impact of growing the American workforce, currently supporting 101,738 jobs related to project development, siting, turbine manufacturing, transportation, and other sectors—an increase of 32% from 2015.

Table 2. U.S. Wind Power Rankings: the Top 20 States

Installed Capacity (MW)				Percentage of In-State Generation	
Annual (2016)		Cumulative (end of 2016)		Actual (2016)*	
Texas	2,611	Texas	20,320	Iowa	36.6%
Oklahoma	1,462	Iowa	6,911	South Dakota	30.3%
Iowa	707	Oklahoma	6,645	Kansas	29.6%
Kansas	687	California	5,656	Oklahoma	25.1%
North Dakota	603	Kansas	4,451	North Dakota	21.5%
Nebraska	438	Illinois	4,026	Minnesota	17.7%
Minnesota	291	Minnesota	3,499	Colorado	17.3%
Maine	288	Oregon	3,163	Vermont	15.4%
Missouri	201	Washington	3,075	Idaho	15.2%
Illinois	184	Colorado	3,026	Maine	13.9%
West Virginia	103	North Dakota	2,746	Texas	12.6%
Ohio	102	Indiana	1,897	Oregon	12.1%
Michigan	80	New York	1,827	New Mexico	10.9%
Wyoming	80	Michigan	1,611	Nebraska	10.1%
New York	78	Wyoming	1,489	Wyoming	9.4%
Utah	64	Pennsylvania	1,369	Montana	7.6%
Colorado	61	Nebraska	1,328	Washington	7.1%
Rhode Island	45	New Mexico	1,112	California	6.9%
Pennsylvania	40	South Dakota	977	Hawaii	6.7%
New Mexico	32	Idaho	973	Illinois	5.7%
<i>Rest of U.S.</i>	48	<i>Rest of U.S.</i>	6,041	<i>Rest of U.S.</i>	1.0%
TOTAL	8,203	TOTAL	82,143	TOTAL	5.6%

* Based on 2016 wind and total generation by state from EIA's *Electric Power Monthly*.

Source: AWEA project database, EIA

2016 wind development in Minnesota

More than 291 MW of new wind was added in Minnesota in 2016. In addition, some of the earliest wind farms developed in the state are planned for repowering or decommissioning, creating opportunities to upgrade prime wind sites with larger and more efficient wind turbines. A summary of several Minnesota wind projects for 2016 follows:

Odell Wind, 200 MW_{AC} (200,000 kW) in Cottonwood, Jackson, Martin, and Watonwan Counties, was developed by Algonquin Power Co. and is owned by Enel Green Power for energy sales to Xcel Energy. In

November 2014, Geronimo sold Odell to Algonquin Power Co., and Geronimo provided ongoing assistance in project development. The project achieved commercial operation in July 2016.

Black Oak & Getty, 78 MW_{AC} (78,000 kW) in Stearns County, was developed by Geronimo Energy and is owned by Sempra Energy for energy sales to the Minnesota Municipal Power Association. The project achieved commercial operation in November 2016.

South Fork Wind, 13.8 MW_{AC} (13,800 kW) near Worthington in Jackson County, was developed by Geronimo Energy and owned by Aspenall Energy Delaware LLC for energy sales to Muscatine Power and Water in Iowa.

Decommissioning: Wind Power Partners '93 (aka Buffalo Ridge Wind Farm), 26 MW_{AC} (26,280 kW) in Lincoln County, the first utility-scale wind farm to be developed in Minnesota, began commercial operation in 1994 for energy sales to Xcel Energy. The wind farm consists of 73 Kenetech 33M-VS wind turbines rated at 360 kW each and was acquired by NextEra Energy Resources in 2003. The project stopped operating in December 2016 and is currently being decommissioned, with ongoing evaluation of the potential for repowering. This will be the first wind farm to be completely decommissioned in Minnesota.

Wind projects in development in Minnesota 2017-2020

There is currently over 1,300 MW of wind power in development in Minnesota with estimated completion by 2020. Construction on these projects began this year. There is an additional 1,300 MW of wind power in development in other states to serve Minnesota customers, with estimated completion by 2020. Construction will begin in 2018.

New wind projects in development in Minnesota over the next few years include the following projects:

Bergey Wind Project, 0.5 MW_{AC} (500 kW), developed by Gone2Green for Xcel Energy and distributed among 50 sites across three counties in Xcel's service territory. (RDF funded)

Blazing Star I, 200 MW_{AC} in Lincoln County, developed by Geronimo for energy sales to Xcel Energy. Project construction is expected to begin in 2017 for completion in 2018.

Blazing Star II, 200 MW_{AC} in Lincoln County, developed by Geronimo for energy sales to Xcel Energy. Project construction is expected to begin in 2017 for completion by 2020.

Dodge County Wind, 200 MW_{AC} in Dodge County, developed by Next Era. Project construction is expected to start in 2018 for completion in 2020.

Freeborn Wind, 200 MW_{AC} in Freeborn County, Minnesota, and Worth and Mitchell Counties, Iowa, is being developed by Invenergy for sale to Xcel Energy by 2020.

Lake Benton II, 100 MW_{AC} in Pipestone County, is a planned repowering of the 102.75 MW Lake Benton II project. The project will be developed by NextEra Energy Resources for transfer to Xcel upon completion by 2020.

Palmer's Creek, 44.6 MW_{AC} in Chippewa County, developed by Fagen Engineering. Project construction is expected to start in 2017 for completion by 2018.

Red Lake Falls Hybrid Project, 4.6MW_{AC} wind and 1 MW solar in Red Lake Falls, is in development by Juhl Energy. This will be the first project in the United States to use a GE integrated wind and solar plant designed to share the same converter.

Red Pine Wind, 200 MW_{AC} in Lincoln County, developed by EDF Renewable Energy for wholesale energy sales into the MISO market. Project construction is expected to begin in 2017 for completion in 2018.

Woodstock Hills, 9.2 MW_{AC}, developed by Juhl Energy for sales to Xcel Energy. If approved, this would be the first wind project in Minnesota to repower an existing 10.2 MW wind farm with new turbines. This site will also add 1 MW_{AC} of solar at the same site, increasing the capacity value of the system at the same point of interconnection.

