# Table of Contents

## Third Quarter 2019 Highlights

### U.S. Wind Power Capacity Growth
- U.S. Annual and Cumulative Wind Power Capacity Growth
- Quarterly U.S. Wind Power Capacity Installations
- New Wind Power Capacity Installations in 2019, by State
- U.S. Wind Power Cumulative Installed Capacity, by State
- Wind Power Capacity Under Construction or in Advanced Development
- Wind Power Capacity Under Construction
- Wind Power Capacity Under Construction, by State
- Wind Power Capacity in Advanced Development
- Wind Power Capacity in Advanced Development, by State
- Wind Power Capacity Under Construction or in Advanced Development, Top States

### Wind Power Procurement Activity
- Wind Power Capacity Offtake Status
- Quarterly Wind Power Purchase Agreements
- 2019 Power Purchase Agreements
- Map of Power Purchase Agreements Announced in 2019
- Mergers & Acquisition Activity

### Wind Turbine Market Trends
- Wind Turbine Manufacturer Market
- Land-based Turbine Technology Trends
- Regional Turbine Technology Trends

### U.S. Offshore Wind Energy Activity

### Appendices
- Map of Projects Online in 2019, Under Construction, or in Advanced Development
- Utility-Scale Wind Projects Completed in 2019
- Utility-Scale Wind Projects Under Construction
- Utility-Scale Wind Projects in Advanced Development
- State Offshore Wind Solicitation Project Winners
- 2019 Power Purchase Agreements
- 2019 Project Acquisition Activity
- 2019 Electric Utility Renewable Energy Requests for Proposals (RFPs)
- AWEA Data Services
Third Quarter Highlights

2019 Wind Project Installations

- The U.S. wind industry installed 1,927 MW of new wind power capacity in the third quarter of 2019. The industry has commissioned 3,667 MW in the first nine months of the year, a 123% increase over the first three quarters of 2018.
- Project owners commissioned eight new projects in three states in the third quarter. Texas led with 1,232 MW installed, followed by Kansas with 475 MW and New Mexico with 221 MW.
- There are now over 100,000 MW of operating wind power capacity in the United States, with more than 57,700 wind turbines operating across 41 states and two U.S. territories.
- Project owners partially repowered six projects in the third quarter, increasing the projects’ total capacity from 618 MW to 696 MW. Over 1,000 MW have been repowered year-to-date.

Wind Capacity Under Construction or in Advanced Development

- The U.S. wind project pipeline grew to a new record in the third quarter with a total of 46,495 MW now underway. There are now 22,651 MW under construction and an additional 23,844 MW in advanced development. The total pipeline represents a 22% year-over-year increase.
- Projects totaling 3,945 MW started construction and 6,145 MW entered advanced development during the third quarter. The combined 10,090 MW marks the highest volume of new announcements on record.
- 19 states now have over 1,000 MW under construction or advanced development. Texas hosts 19% of the total development pipeline, followed by Wyoming (11%), Oklahoma (7%), Iowa (6%), and Virginia (6%).
- Focusing on offtake, 44% of capacity in the pipeline has a PPA in place, while 28% is utility-owned and 6% has a hedge contract.

Wind Power Procurement Activity

- Project developers announced 1,379 MW of new PPAs in the third quarter, contributing to a total of 6,179 MW for the year.
- Corporate customers signed 64% (888 MW) of capacity contracted in the third quarter. Gap Inc. and Sprint Corp purchased wind energy for the first time.
- Utilities signed contracts for 311 MW of wind capacity and announced plans to add 4,198 MW under direct ownership in the third quarter, including Dominion Energy, American Electric Power, and DTE Energy.

Turbine Technology Trends

- GE Renewable Energy turbines represent 41% of new capacity installations year-to-date, while Vestas accounts for 32% and Siemens Gamesa Renewable Energy represents 27%.
- Average turbine capacities continue to increase, with 22% of turbines installed year-to-date rated between 3.4 MW to 3.6 MW.
- Looking forward, the majority of projects underway that have reported turbine models are using turbines with a nameplate capacity between 2 MW and 2.9 MW, while 32% have selected turbines rated 3 MW or higher.
- The U.S. wind industry reached a major milestone in the third quarter as new projects brought total installed capacity over 100 gigawatts. There are now 100,125 MW of wind energy operating in the United States, with more than 57,700 wind turbines spinning across 41 states and two U.S. territories.
Quarterly U.S. Wind Power Capacity Installations

- The U.S. wind industry commissioned 1,927 MW of wind power capacity in the third quarter of 2019, the highest third quarter for installations on record.
- Installations for the year total 3,667 MW, a 123% increase over the first three quarters of 2018.
- In addition to new capacity installations, project owners partially repowered 618 MW of existing projects in the third quarter. Capacity across the repowered projects increased 78 MW due to changes in turbine nameplate capacities, bringing the total capacity to 696 MW.
Developers installed eight new wind projects totaling 1,927 MW in three states during the third quarter.

Texas led third quarter capacity additions with 1,232 MW, Kansas added 475 MW, and New Mexico added 221 MW.

Year-to-date the industry has added 20 projects across 9 states totalling 3,667 MW.

Texas leads in installations for the year (2,129 MW), followed by Iowa (536 MW) and Kansas (475 MW).

Project owners also partially repowered six projects totaling 696 MW post-repower in Iowa, Oregon, Texas, and Wyoming in the third quarter (not shown on map).
• Texas continues to lead the nation in installed capacity, surpassing 27 GW of wind power in the third quarter.
• Kansas became the fourth state to exceed 6,000 MW of operating wind energy, passing California in the state rankings.
• 19 states have over 1,000 MW of installed capacity.
The near-term U.S. wind project pipeline grew to a new record in the third quarter of 2019. There are now 46,495 MW of wind power capacity either under construction (22,651 MW) or in advanced development (23,844 MW), including 5,796 MW of offshore wind. The total pipeline increased 11% over the second quarter and 22% year-over-year as thanks to strong demand from utilities and corporate purchasers, as well as an increase in offshore wind project announcements.

Project developers announced a record 10,090 MW in combined new activity in the third quarter of 2019, with projects totaling 3,945 MW starting construction and an additional 6,145 MW entering advanced development.

Wind projects currently under construction have been underway for an average of roughly one year, while projects in advanced development have been underway for 14 months, on average. Half of the capacity underway started construction or entered advanced development in 2019.
- Construction activity reached yet another record in the third quarter, with a total of 22,651 MW now under construction.
- Construction activity increased 8% over the previous quarter, with 3,945 MW starting construction in the third quarter.
- Total wind capacity under construction is up 11% year-over-year and there is 65% more wind under construction now than at the same time two years ago.
Wind Power Capacity Under Construction, by State

Note: Project developers self-report projects as under construction. The AWEA under construction definition is at the discretion of the project developer and may be different from the start construction definition under IRS Notices 2013-29 and 2013-60; projects are presumed to have taken steps to qualify for the PTC through safe harbor or physical construction.

Member Version Only
Note: AWEA defines a project as in advanced development if it has not yet started construction but has either signed a PPA (or similar long-term contract), announced a firm turbine order, or been announced to proceed under utility ownership.
Member Version Only

Note: AWEA defines a project as in advanced development if it has not yet started construction but has either signed a PPA (or similar long-term contract), announced a firm turbine order, or been announced to proceed under utility ownership. Offshore wind capacity is assigned to a state based on the BOEM lease area location.
Wind Power Capacity Under Construction or in Advanced Development, Top States

Member Version Only

Note: Offshore wind capacity is assigned to a state based on the BOEM lease area location.
 Quarterly Wind Power Purchase Agreements

Member Version Only

Note: PPA totals reflect the original offtaker and do not include sleeved PPAs or subsequent sales through utilities. Totals do not include PPAs for projects that were later cancelled.
2019 Power Purchase Agreements

Member Version Only
Member Version Only
Member Version Only
Land-based Turbine Technology Trends

Member Version Only
Regional Turbine Technology Trends

Member Version Only

Note: Data represents land-based projects that have announced turbine models to AWEA.
Member Version Only
Member Version Only
Map of Projects Online in 2019, Under Construction, or in Advanced Development

Projects Online 1Q-2Q 2019
Projects Online 3Q 2019
Projects Under Construction or in Advanced Development

Project Capacity:
- 1 - 99 MW
- 100 - 199 MW
- 200 - 299 MW
- 300 - 399 MW
- 400 - 499 MW
- 500 - 3,000 MW
### Utility-Scale Wind Projects Completed in 2019

<table>
<thead>
<tr>
<th>State</th>
<th>Project Phase Name</th>
<th>Project Capacity (MW)</th>
<th>Turbine OEM</th>
<th>Turbine Model</th>
<th>Project Developer(s)</th>
<th>Project Owner(s)</th>
<th>Power Purchaser(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Quarter 2019</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AK</td>
<td>St. Mary's Wind Turbine</td>
<td>0.90</td>
<td>EWT Americas</td>
<td>DW-52-900</td>
<td>Alaska Village Electric Coop</td>
<td>Alaska Village Electric Coop</td>
<td>Alaska Village Electric Coop</td>
</tr>
<tr>
<td>IL</td>
<td>Mendota Hills Repowering</td>
<td>76.13</td>
<td>Siemens Gamesa Renewable Energy</td>
<td>SG 2.6-126</td>
<td>Leeward Renewable Energy Development, LLC</td>
<td>Leeward Renewable Energy, LLC</td>
<td>Digital Realty</td>
</tr>
<tr>
<td>IA</td>
<td>English Farms</td>
<td>170.30</td>
<td>GE Renewable Energy</td>
<td>GE 2.3-116; GE 2.5-127</td>
<td>Interstate Power and Light Co, Tradewind Energy</td>
<td>Interstate Power and Light Co</td>
<td>Interstate Power and Light Co</td>
</tr>
<tr>
<td>IA</td>
<td>Saratoga</td>
<td>66.00</td>
<td>Vestas</td>
<td>V116-2.0</td>
<td>Madison Gas &amp; Electric Co</td>
<td>Madison Gas &amp; Electric Co</td>
<td>Madison Gas &amp; Electric Co</td>
</tr>
<tr>
<td>IA</td>
<td>Upland Prairie</td>
<td>299.30</td>
<td>GE Renewable Energy</td>
<td>GE 2.3-116; GE 2.5-116</td>
<td>Apex Clean Energy, Interstate Power and Light Co</td>
<td>Interstate Power and Light Co</td>
<td>Interstate Power and Light Co</td>
</tr>
<tr>
<td>MI</td>
<td>Pine River</td>
<td>161.30</td>
<td>GE Renewable Energy</td>
<td>GE 2.3-116; GE 2.5-116</td>
<td>Invenergy</td>
<td>DTE Energy</td>
<td>The DTE Electric Company</td>
</tr>
<tr>
<td>MN</td>
<td>Stoneray</td>
<td>66.63</td>
<td>Siemens Gamesa Renewable Energy</td>
<td>SWT-2.3-108; SWT-2.625-120</td>
<td>EDF Renewables</td>
<td>EDF Renewables</td>
<td>Southern Minnesota Municipal Power Agency</td>
</tr>
<tr>
<td><strong>Second Quarter 2019</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CA</td>
<td>Mann Packing</td>
<td>1.70</td>
<td>GE Renewable Energy</td>
<td>1.7-100</td>
<td>Foundation Windpower</td>
<td>Foundation Windpower</td>
<td>Mann Packing, Excess to PG&amp;E</td>
</tr>
<tr>
<td>TX</td>
<td>Hale Wind</td>
<td>478.00</td>
<td>Vestas</td>
<td>V110-2.0; V116-2.0</td>
<td>Tri Global Energy; NextEra Energy Resources</td>
<td>Xcel Energy</td>
<td>Southwestern Public Service Co</td>
</tr>
<tr>
<td>TX</td>
<td>Patriot Wind</td>
<td>226.05</td>
<td>Vestas</td>
<td>V126-3.45; V136-3.6</td>
<td>Apex Clean Energy; Clearway Energy Group</td>
<td>Avangrid Renewables</td>
<td>Hedge Contract (ERCOT)</td>
</tr>
<tr>
<td>TX</td>
<td>Seymour Hills</td>
<td>30.00</td>
<td>GE Renewable Energy</td>
<td>GE 2.5-127</td>
<td>ENGIE North America</td>
<td>ENGIE North America</td>
<td>Akamai Technologies (8MW); Ingersoll Rand (22 MW)</td>
</tr>
<tr>
<td><strong>Third Quarter 2019</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KS</td>
<td>Prairie Queen</td>
<td>199.28</td>
<td>Siemens Gamesa Renewable Energy</td>
<td>SG 2.6-126</td>
<td>EDP Renewables North America LLC</td>
<td>EDP Renewables North America; Axium Infrastructure</td>
<td>Kansas City Power &amp; Light</td>
</tr>
<tr>
<td>KS</td>
<td>Solomon Forks</td>
<td>275.63</td>
<td>Siemens Gamesa Renewable Energy</td>
<td>SG 2.625-120</td>
<td>ENGIE North America Inc.</td>
<td>ENGIE North America Inc.</td>
<td>Target (100 MW); T-Mobile (160 MW); Merchant (15.63 MW)</td>
</tr>
<tr>
<td>NM</td>
<td>Grady</td>
<td>220.50</td>
<td>Siemens Gamesa Renewable Energy</td>
<td>SWT-2.625-120</td>
<td>Pattern Energy Group LP; National Renewable Solutions</td>
<td>Pattern Energy Group LP</td>
<td>Sacramento Municipal Utility District</td>
</tr>
<tr>
<td>TX</td>
<td>Foard City</td>
<td>350.28</td>
<td>GE Renewable Energy</td>
<td>GE 2.5-127</td>
<td>Innergex</td>
<td>Innergex</td>
<td>Luminant Energy (300 MW); Merchant (ERCOT) (50.28)</td>
</tr>
<tr>
<td>TX</td>
<td>Gopher Creek Wind Farm</td>
<td>158.00</td>
<td>Vestas North America</td>
<td>V116-2.0</td>
<td>Tri Global Energy</td>
<td>Terna Energy</td>
<td>Hedge Contract</td>
</tr>
<tr>
<td>TX</td>
<td>Lockett</td>
<td>183.75</td>
<td>GE Renewable Energy</td>
<td>GE 2.5-127</td>
<td>Lincoln Clean Energy</td>
<td>Lincoln Clean Energy</td>
<td>Hedge (147 MW); Unknown</td>
</tr>
<tr>
<td>TX</td>
<td>Santa Rita East</td>
<td>302.40</td>
<td>GE Renewable Energy</td>
<td>GE 2.5-127</td>
<td>Invenergy</td>
<td>AEP Renewables; Invenergy</td>
<td>Grupo Bimbo (100 MW); Merck &amp; Co (60 MW); Merchant (42.4 MW); Novartis (100 MW)</td>
</tr>
</tbody>
</table>
Utility-Scale Wind Power Projects Under Construction

Member Version Only

Note: The AWEA under construction definition is at the discretion of the project developer and may be different from the start construction definition under IRS Notices 2013-29 and 2013-60.
Utility-Scale Wind Power Projects Under Construction

Member Version Only

Note: The AWEA under construction definition is at the discretion of the project developer and may be different from the start construction definition under IRS Notices 2013-29 and 2013-60.
Member Version Only
Utility-Scale Wind Power Projects Under Construction

Member Version Only

Note: The AWEA under construction definition is at the discretion of the project developer and may be different from the start construction definition under IRS Notices 2013-29 and 2013-60.
Member Version Only
Utility-Scale Wind Power Projects in Advanced Development

Member Version Only

Note: AWEA defines a project as in advanced development if it has not yet started construction, but has either signed a PPA, announced a firm turbine order, or been announced to proceed under utility ownership.
Utility-Scale Wind Power Projects in Advanced Development

Member Version Only

Note: AWEA defines a project as in advanced development if it has not yet started construction, but has either signed a PPA, announced a firm turbine order, or been announced to proceed under utility ownership.
Utility-Scale Wind Power Projects in Advanced Development

Member Version Only

Note: AWEA defines a project as in advanced development if it has not yet started construction, but has either signed a PPA, announced a firm turbine order, or been announced to proceed under utility ownership.
Utility-Scale Wind Power Projects in Advanced Development

Note: AWEA defines a project as in advanced development if it has not yet started construction, but has either signed a PPA, announced a firm turbine order, or been announced to proceed under utility ownership.

Member Version Only
Utility-Scale Wind Power Projects in Advanced Development

Member Version Only

Note: AWEA defines a project as in advanced development if it has not yet started construction, but has either signed a PPA, announced a firm turbine order, or been announced to proceed under utility ownership.
Member Version Only
2019 Power Purchase Agreements

Member Version Only
Member Version Only
2019 Project Acquisition Activity

Member Version Only
2019 Project Acquisition Activity

Member Version Only

Note: Data include operating project acquisitions, and do not include projects acquired either upon or prior to commercial operation. YieldCo drop-downs are not considered project acquisitions.
2019 Project Acquisition Activity

Member Version Only
Electric Utility Renewable Energy Requests for Proposals (RFPs)

Member Version Only
This Report is Powered by WindIQ

WindIQ is your comprehensive database of all online, under construction, and advanced development wind projects and wind-related manufacturing facilities in the United States, with interactive web mapping features.

All current AWEA Business and Utility members can access WindIQ at www.awea.org/windiq or www.windiq.awea.org.

For additional AWEA industry data & analysis, please visit www.awea.org/marketreports where you can download previous versions of the Quarterly Market Reports and the latest Annual Market Report.

About the American Wind Energy Association
AWEA is the national trade association of the U.S. wind energy industry. We represent 1,000 member companies and over 100,000 jobs in the U.S. economy, serving as a powerful voice for how wind works for America. Members include global leaders in wind power and energy development, turbine manufacturing, and component and service suppliers. They gather each year at the Western Hemisphere’s largest wind power trade show, the AWEA WINDPOWER® Conference & Exhibition. Find information about wind energy on the AWEA website, www.awea.org. Gain insight into industry issues on AWEA’s blog, Into the Wind. And please join us on Facebook, and follow @AWEA on Twitter.