The American wind energy industry responded to the extension of the Production Tax Credit in 2013 by starting construction on an historic and unprecedented number of new wind farms, backed by Power Purchase Agreements with electric utilities on a record scale by the close of the year.

With the installation of 1,084 MW in 2013 the U.S. now has an installed wind capacity of 61,108 MW. There are over 12,000 MW under construction, including 10,900 MW that started construction activity during the fourth quarter.
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2013 Installation Details

- Following the late extension of the Production Tax Credit (PTC) and Investment Tax Credit (ITC) plus the historic level of installations in the fourth quarter of 2012, the U.S. wind industry installed 1.6 megawatts (MW) of new capacity during the first quarter of 2013 and 0 MW during the second quarter of 2013. During the third quarter, the U.S. wind industry installed 68.3 MW through the completion of projects in Alaska, California and Colorado. The fourth quarter of 2013 saw the most activity with 1,012.4 MW completed across Kansas, California, Michigan, Texas, New York, Nebraska, Iowa, Colorado, Massachusetts and Indiana.

- Total wind power capacity installations for 2013 were 1,084 MW. This represents a 92% reduction from the record-setting 13,131 MW installed during 2012 and this drop-off can be attributed to the late extension of the PTC and ITC.

- There are now 61,108 MW of installed wind capacity in the United States. This is enough to power over 15.3 million homes.

Wind Power Construction Activity

- At the end of 2013 there were more U.S. wind power MW under construction than ever in history: more than 10,900 MW started construction activity during the fourth quarter and more than 12,000 MW are currently under construction. When completed, these 90+ projects will generate enough electricity annually to power 3.5 million households.

- Projects are currently under construction in at least 20 states. There are more than 7,000 MW under construction in Texas - more MW than any other state currently has installed. The second most MW are under construction in Iowa (1,050 MW). Other top states for construction activity include Kansas (722 MW), North Dakota (632 MW), Michigan (342 MW) and New Mexico (317 MW).

- Of the projects under construction, at least 3,770 MW of wind energy projects have long-term power offtake agreements in place through long-term PPAs or direct utility ownership. Given the high number of projects under construction in Texas, a large percentage of the projects under construction are merchant capacity on ERCOT. Additional wind energy capacity has secured long-term power offtake agreements but has not yet started construction.

- Construction activity is primarily focused in the interior region, from North Dakota down through Texas. The late 2013 completion of the Competitive Renewable Energy Zone (CREZ) transmission lines in the Panhandle and Western parts of Texas has spurred wind development in the state. According to the main Texas grid operator, ERCOT, 6,947 MW of proposed projects have signed interconnection agreements and a total of 24,000 MW of proposed wind projects have applied to connect to the ERCOT grid. The response to the opening of such high quality wind resource has been so overwhelming that even though the CREZ grid upgrades were just completed, the grid operator is already exploring additional transmission expansions to facilitate more wind energy development in the Panhandle.
Wind Power Purchase Agreements

- At least 60 power purchase agreements (PPAs) have been signed or announced this year, totaling nearly 8,000 MW. These projects are spread across 18 states.

- Corporate purchasers like Google and Microsoft continue to invest in wind power, with both technology-giants signing long-term PPAs for projects that will power their Texas data centers.

- Utilities, large and small, looking to take advantage of historical low prices for wind energy, diversify their fuel portfolios, and hedge against future fuel volatility have signed a record number of long-term contracts. Smaller utilities signing contracts include 67 municipal utilities in Missouri acting through a state-wide joint action agency or the 12 community members of the Minnesota Municipal Power Agency. Investor-owned utilities are capitalizing on the PTC extension too. Xcel Energy signed nearly 1,900 MW of wind PPAs across three subsidiaries. AEP subsidiaries signed 800 MW of PPAs for projects in Indiana and Oklahoma. Omaha Public Power District (OPPD) also was one of the top signatories of wind contracts in 2013. The utility will purchase the output from 600 MW of projects in Nebraska starting in 2014.

- Of the 8,000 MW of PPAs signed in 2013, 5,200 MW have yet to start construction.

Turbine Orders & Master Supply Agreements

- There are now over 5,600 MW of turbine orders placed with major manufacturing facilities active in places such as Colorado, Florida, Kansas, Iowa and South Dakota.

- U.S. manufacturing production capacity has ramped up dramatically, and the largest turbine order in history of the U.S. wind industry was placed in the Fourth Quarter.

Wind Power Costs

- The cost of wind energy has fallen by 43 percent in just four years, due to investments in technological advancements and stable policy.

- “In many parts of the country today, including the impact of the PTC, wind is the most economic form of new energy generation.”
  - Moray P. Dewhurst, Vice Chairman, Chief Financial Officer and Executive Vice President of NextEra Energy on January 28, 2014 Earnings Call
U.S. Wind Power Capacity Growth

- Cumulative Capacity
- Annual Capacity Installations
- 1Q Capacity Installations
- 2Q Capacity Installations
- 3Q Capacity Installations
- 4Q Capacity Installations

Wind Power Capacity (MW)

- 2001: 4,147
- 2002: 4,557
- 2003: 6,222
- 2004: 6,619
- 2005: 8,993
- 2006: 11,450
- 2007: 16,702
- 2008: 25,065
- 2009: 35,068
- 2010: 40,283
- 2011: 46,930
- 2012: 60,007
- 2013: 61,108

Cumulative capacity growth from 2001 to 2013.
U.S. Wind Power Capacity Installations by State

- **0 to 100 MW**
- **>100 MW to 1,000 MW**
- **>1,000 MW to 5,000 MW**
- **>5,000 MW to 10,000 MW**
- **>10,000 MW**

### Map Legend
- **AK** 62
- **CA** 5,830
- **CO** 2,332
- **CT**
- **DE** 2
- **HI** 206
- **ID** 973
- **IN** 1,544
- **IA** 5,178
- **IL** 3,568
- **KS** 2,967
- **KY**
- **LA**
- **MA** 106
- **MD** 120
- **ME** 431
- **MI** 1,163
- **MN** 2,987
- **MS**
- **MO** 459
- **MT** 645
- **NV** 152
- **NY** 1,722
- **OH** 428
- **OR** 3,153
- **PA** 1,340
- **PR** 125
- **RI** 9
- **SC**
- **SD** 783
- **TN** 29
- **TX** 12,355
- **UT** 325
- **VA**
- **VT** 119
- **WA** 2,808
- **WI** 648
- **WV** 583
- **WY** 1,410
- **WI** 648
- **WY** 1,410
- **WV** 583
Wind Power Capacity Completions by Quarter

Wind Power Capacity (MW)

<table>
<thead>
<tr>
<th>Year</th>
<th>1Q</th>
<th>2Q</th>
<th>3Q</th>
<th>4Q</th>
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<tbody>
<tr>
<td>2008</td>
<td>1,621</td>
<td>1,306</td>
<td>1,331</td>
<td>1,221</td>
</tr>
<tr>
<td>2009</td>
<td>4,105</td>
<td>3,080</td>
<td>1,222</td>
<td>1,589</td>
</tr>
<tr>
<td>2010</td>
<td>4,114</td>
<td>5,411</td>
<td>7,041</td>
<td>6,731</td>
</tr>
<tr>
<td>2011</td>
<td>3,298</td>
<td>1,118</td>
<td>1,050</td>
<td>1,205</td>
</tr>
<tr>
<td>2012</td>
<td>3,446</td>
<td>1,695</td>
<td>1,615</td>
<td>1,837</td>
</tr>
<tr>
<td>2013</td>
<td>8,380</td>
<td>2</td>
<td>70</td>
<td>1,012</td>
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</table>
As of December 31, 2013 there were a record-setting 12,300 MW under construction across 20 states. The previous high under construction total was 10,300 MW during the second quarter of 2012. The fourth quarter of 2013 also saw records fall for new construction activity as at least 10,900 MW of projects began physical work of significant nature.
Map of Wind Power Capacity Under Construction

- 5,000+ MW
- 1,000-4,999 MW
- 500-999 MW
- 250-499 MW
- 1-249 MW
- No construction confirmed by AWEA
Utilities on Wind

Recent statements on why utilities are interested in adding wind power to their portfolios...

From the Southeast

“Adding additional wind energy to our generation mix underscores our commitment to a diverse portfolio that offers clean, safe, reliable, sustainable and low-cost electricity for years to come.”
- Paul Bowers, president & CEO of Georgia Power after signing 2 PPAs for Georgia Power’s first wind contracts. April 23, 2013

From the Midwest

“We’ve found a way to meet the state of Minnesota’s renewable energy standard early and reduce costs at the same time ... Expanding Bison will add to our renewable energy supply, resulting in the lowest cost resource over time by capturing the benefits of the extended production tax credit and a competitive turbine market”
- Al Hodnik, chairman and CEO of ALLETE after announcing the expansion of their Bison Wind Energy Center

From the Interior West

“It works out to a very good levelized cost for our customers,....These prices are so compelling, the energy [cost] associated with it is less than you can do locking in a 20-year gas strip.”
- Xcel Energy, Ben Fowke, Xcel President and CEO. The Colorado and Minnesota public utility commissions approved wind PPAs totaling 850 MW. Xcel Energy expects to pay about $25/MWh to $35/MWh over 20 years for the recently approved wind power purchase agreements

From the Northeast

“By pooling the resources of all the utilities, we were able to purchase a large amount of clean, renewable energy for the state at below-market prices. In addition to delivering benefits for years to come, these agreements have the potential to save customers money over the long term.”
- Ronald Gerwatowski, National Grid Sr. VP for U.S. Regulation and Pricing. The state’s biggest utilities, National Grid, Northeast Utilities, and Unitil Corp, in a milestone for New England’s wind power industry, have signed long-term contracts for 565 MW of wind. If approved, the contracts would eventually save customers between 75 cents and $1 a month, utilities estimated.

From the Plains

“The decision to contract for an additional 400 MW was based on extraordinary pricing opportunities that will lower costs for PSO’s customers by an estimated $53 million in the first year of the contracts. Annual savings are expected to grow each year over the lives of the contracts.”
- American Electric Power’s Public Service Company of Oklahoma, signed power purchase agreements for 400 MW of wind energy capacity, noting it decided to triple the amount of requested wind energy capacity.
For more information on AWEA market analysis, please visit www.awea.org where you can access older versions of the Quarterly Market Reports and see the latest Annual Market Report.

This report can be accessed at www.awea.org/4Q2013

For a spreadsheet with underlying data or with any corrections, please contact Emily Williams at ewilliams@awea.org