

# Massachusetts, New York and Rhode Island Cooperate on Market Research and Analysis in Support of Offshore Wind Development

## Summary

The Massachusetts Clean Energy Center, the Massachusetts Department of Energy Resources, New York State Energy Research & Development Authority (NYSERDA), and the Rhode Island Office of Energy Resources came together to identify opportunities for cooperative action by states in the Northeast to help deploy offshore wind at the scale necessary to reduce costs and establish a regional supply chain.<sup>1</sup> This effort was first conceived in 2015 as a collaborative effort among participating states that could help to jump start the nascent offshore wind market.

During the project's execution from 2015 through 2017, offshore wind in the U.S. has advanced from concept to reality. At project conception there were no operating offshore wind turbines in U.S. waters, nor were there any articulated policies or legislative goals for offshore wind deployment in the Northeast states beyond a Rhode Island authorization for 100 to 150 megawatts. Since then, initiatives advanced by states, the federal government, the offshore wind industry, and interested stakeholders have advanced multiple milestones for offshore wind including:

- The nation's first offshore wind project, the Block Island Wind Farm, opened to widespread publicity and considerable acclaim.
- The Commonwealth of Massachusetts enacted an "Act to Promote Energy Diversity," which allows for the procurement of 1,600 megawatts of offshore wind energy through 2027, beginning with an initial solicitation in 2017 to procure at least 400 megawatts.
- The federal Bureau of Ocean Energy Management (BOEM) auctioned the New York Wind Energy Area, receiving strong bidder interest and record high prices.
- New York Governor Andrew M. Cuomo set a goal for the state to develop 2,400 megawatts of offshore wind by 2030 and, in his 2018 State of the State address, announced that New York will issue solicitations in 2018 and 2019 for a combined total of at least 800 megawatts.
- The Long Island Power Authority approved purchase of the output from a 90-megawatt offshore wind project in the Rhode Island/Massachusetts wind energy area.

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<sup>1</sup> This project, called *A Roadmap for Multi-State Cooperation on Offshore Wind Development* was funded in part by a grant from the U.S. Department of Energy (DOE) to the New York State Energy Research & Development Authority (NYSERDA).

At the same time, advances in wind turbine technology are driving substantial cost reductions for offshore wind in Europe. During this time of rapid industry advancement, the project focused on three detailed analyses that inform and will continue to advise state efforts to grow offshore wind markets and expand the regional supply chain in a manner that creates local jobs and economic opportunity, and drive cost reductions for offshore wind in the Northeast:

- Northeast Offshore Wind Regional Market Characterization,
- U.S. Job Creation in Offshore Wind, and
- A U.S. Jones Act Compliant Offshore Wind Turbine Installation Vessel Study.

Beyond working together toward the successful completion of the referenced reports, the participating states have found it useful to coordinate and collaborate on sharing information, challenges, and analyses related to offshore wind initiatives. The benefits include broader and deeper awareness of activities in other states, opportunities to refine specific initiatives and leverage knowledge and resources, and opportunities to define common interests and speak with one voice on matters of mutual interest. The participating states expect to continue the engagement initiated through the DOE-funded project and invite participation of other states that are advancing offshore wind. Some areas that may present opportunities for ongoing state coordination and collaboration include:

- Sharing best practices on environmental analysis and survey work;
- Sharing information on state-level activities at key milestones;
- Coordinating on potential impacts between fishing and offshore wind;
- Coordinating on potential impacts between marine mammals and offshore wind;
- Engaging and exploring opportunities to coordinate on offshore wind transmission;
- Coordinating on workforce training efforts;
- Collaborating and sharing best practices on supply chain opportunities; and
- Collective communication to federal agencies on matters of regional impact.

The participating states acknowledge that a healthy competition exists between states related to the supply chain opportunity. Nevertheless, multi-state coordination and collaboration can go forward and provide mutual benefits as long as the participating states recognize inherent self-interests in the establishment of a regional offshore wind industry and show flexibility with respect to the substance and timing of specific initiatives. Such an approach acknowledges that the offshore wind landscape will continue to evolve, that the growth of a vibrant regional offshore wind supply chain will benefit all states, and that there will likely be additional opportunities for coordination and collaboration among states in the future.

## Background

Representatives of the three states began discussions in early 2015 about the possibility of working in a more coordinated manner on offshore wind development. Prior to 2015, the states had communicated frequently and cooperated informally, but no formal coordination between the states had been organized. Although various discussions and papers from NGOs and consulting firms had espoused the benefits of multi-state cooperation for advancing offshore wind development, no entity had analyzed which specific collaborative activities might be

effective strategies for helping to develop the regional offshore wind market, infrastructure and supply chain. Note that greater collaborative action is not a substitute for ongoing initiatives by individual states, but rather may be able to reinforce and expedite some of those individual efforts.

In late 2015, NYSERDA received a grant from DOE's State Energy Program 2015 Competitive Energy Awards. The subsequent effort, funded in part by this grant, was led by a Steering Committee with representatives of the participating states.<sup>2</sup> The Steering Committee was assisted by the Clean Energy States Alliance (CESA), which provided meeting facilitation, conducted stakeholder outreach, and helped coordinate the work of project research consultants.<sup>3</sup>

The Steering Committee focused their efforts on better understanding the offshore wind market in the Northeast and the potential for bringing down offshore wind costs by different development levels of projects (pipeline estimates), establishing a regional supply chain, and/or other approaches.

## Key Findings

The Steering Committee members developed a series of analytical work products that lay the ground work for potential future collaboration. These were published separately and contain information that will be useful to a wide range of policymakers and stakeholders.

- **Northeast Offshore Wind Regional Market Characterization (November 2017).** This report, prepared by Sustainable Energy Advantage, LLC, provided an analysis of the scale of potential offshore wind deployment in the region, given the nature of the offshore wind resources, individual state policy drivers on offshore wind procurement and climate change, energy needs (including the retirement of older power plants in the Northeast), and existing electricity generation and transmission capacity. It estimated the upper and lower bounds of the market for offshore wind between 2017 and 2030 in megawatts installed and annual megawatt hours produced. This report is available for download [here](#).

The report provides the states with a common body of knowledge about drivers and limitations for offshore wind in the region and for understanding the potential scale of the region's project pipeline. Key findings include:

- A low regional deployment trajectory could lead to 4,000 megawatts of offshore wind generation by 2030 off the Atlantic coast of the Northeast. This trajectory is commensurate with state policies as of the November 2017 publication date.
- A high regional deployment trajectory could lead to nearly 8,000 megawatts, which could power almost four million homes.
- The key driver for larger amounts of offshore wind is its potential role in helping the region meet its greenhouse gas policies and targets through the year 2030.

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<sup>2</sup> Steering Committee Members include representatives from Massachusetts Clean Energy Center; Massachusetts Department of Energy Resources; NYSERDA; and the Rhode Island Office of Energy Resources. In addition, representatives of the Maine Governor's Energy Office participated in the project's early stages.

<sup>3</sup> CESA contracted with Paul Gromer of Peregrine Energy Associates to serve as meeting facilitator.

- **U.S. Job Creation in Offshore Wind (November 2017).** A study by BVG Associates examined the potential job impacts of building out two pipeline scenarios of offshore wind projects. It quantified the total number of jobs required to develop, manufacture, install, and operate wind turbines for projects completed by 2030. It analyzed markets comparable to the high and low trajectories in the Northeast Offshore Wind Regional Market Characterization. The study then categorized those jobs into baseline jobs, those which are highly likely to be located in the United States, and those additional jobs with either a high, medium, or low likelihood of also being located domestically. The study determined how many jobs would be required by each of 17 sub-elements of the offshore wind supply chain and in 109 different occupations. This report is available for download [here](#).

The report will help inform states' planning and implementation of supply chain and workforce development initiatives. Key findings include:

- A high market scenario of 8,000 megawatts by 2030 could yield a peak of over 16,000 full-time equivalent (FTE) baseline jobs in the U.S. in 2028. Baseline jobs are those which are highly likely to be performed by U.S. workers.
  - When additional jobs that have a high or medium probability of being performed in the U.S. are included, the number of U.S. jobs could climb to over 36,000 FTE annually between 2026 and 2028.
  - A low market scenario of 4,000 megawatts could create roughly half as many baseline jobs as the high scenario and a smaller proportion of high or medium probability jobs.
  - The jobs most likely to be performed in the U.S. include project development and management, supply and installation of electrical substations and subsea cable, and wind farm operation and maintenance.
  - Additional jobs are also possible, with manufacturing jobs seen as the sector with the greatest potential.
  - The high scenario could also trigger more investment in new factories manufacturing offshore wind components and in offshore wind installation and support vessels in the U.S.
- **U.S. Jones Act Compliant Offshore Wind Turbine Installation Vessel Study (November 2017).** A report by GustoMSC, a leading offshore wind vessel design firm based in the Netherlands, examined the functional requirements and costs of constructing a purpose-built vessel that would comply with the federal Jones Act and meet the needs of the U.S. offshore wind industry. The analysis developed conceptual plans for two vessel options: a wind turbine installation vessel and a jack-up feeder barge. Three U.S. shipyards then submitted indicative cost estimates for building the vessels. This report is available for download [here](#). Key findings include:
    - The U.S. Jones Act requires that any vessel transporting cargo between U.S. ports, or between U.S. ports and offshore facilities, be built and flagged in the U.S.
    - U.S. shipyards provided indicative prices averaging \$222 million for the wind turbine installation vessel and \$87 million for a jack-up feeder barge.

- Using the cost data, a business model was created that showed 10-years of work, or a pipeline of approximately 3,500 to 4,000 megawatts of offshore wind capacity (i.e. roughly equivalent to the low regional offshore wind deployment trajectory in the Regional Market Characterization report), could provide the owner of a wind turbine installation vessel with a reasonable rate of return.

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