REVIEW OF MASSACHUSETTS OFFSHORE WIND ENERGY RFP (83C) PROPOSALS

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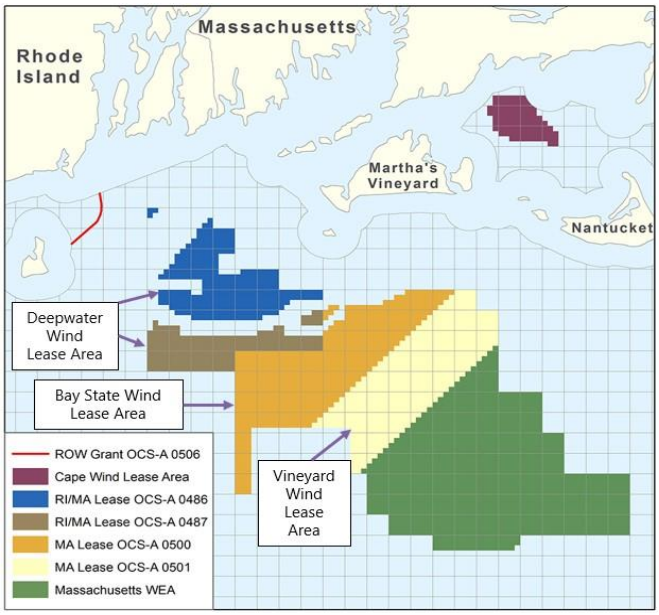
To: Clients and Colleagues

From: John Dalton, President; Margaret Blagbrough, Consultant; Michael Ernst, Executive Advisor; Power Advisory LLC

On December 20, 2017, the Massachusetts investor-owned electric distribution companies (Distribution Companies) in coordination with the Massachusetts Department of Energy Resources (DOER) received three proposals for offshore wind energy generation projects, in response to the RFP they issued for 400 MW (and up to 800 MW) of wind energy under long-term contracts. This procurement is the first in a series of competitive solicitations under the state's 2016 Act to Promote Energy Diversity mandate for 1,600 MW of offshore wind (OSW) by June 30, 2027. Winners of this first procurement will be announced on April 23, 2018. The bidders who submitted proposals are those that hold existing Bureau of Ocean Energy Management (BOEM) Massachusetts or Massachusetts/Rhode Island offshore leases: Deepwater Wind, Bay State Wind (Ørsted and Eversource Energy), and Vineyard Wind (Avangrid Renewables and Copenhagen Infrastructure Partners). The figure below shows the locations of each of the proponents' lease areas.

Map of Proponents' Lease Areas



Source: BOEM

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Proposals are required for the target capacity of 400 MW, but additional proposals between 200 MW and 800 MW are allowed and were submitted. Any chosen proposal over 400 MW must be superior and provide significantly more economic benefits to Massachusetts ratepayers. Each proponent must include a proposal for a generator lead line to deliver offshore wind to the corresponding onshore ISO-New England (ISO-NE) Pool Transmission Facilities (PTF). Additionally, proponents must submit a proposal for an expandable transmission network providing nondiscriminatory access for all offshore wind facilities.

Proponents will be evaluated in three stages. In the first stage, proposals will be evaluated to see if they meet eligibility and threshold criteria. Proposals that meet the basic requirements of stage one will be evaluated based on the costs and benefits of the project in stage two. Quantitative evaluation criteria in this stage include direct costs and benefits and other costs and benefits to retail customers. Qualitative evaluation criteria will include: (1) the siting, permitting and project schedule; (2) reliability benefits; (3) benefits, costs, and contract risk; (4) environmental impacts from siting; and (5) economic benefits to the Commonwealth. In the third stage, the Evaluation Team will further evaluate proposals to ensure that they are the most cost-effective solutions for ratepayers and that they will provide reliable renewable energy for the long-term.

Confidential information including pricing has been redacted from the public versions of bids we have reviewed and summarized below.

BAY STATE WIND

Bay State Wind, the partnership between Ørsted and Eversource, proposed either a 400 MW or 800 MW wind farm 25 miles off of New Bedford, MA. The 400 MW project would be paired with a 30 MW/ 60 MWh battery storage facility, while the 800 MW project would be paired with a 55 MW/110 MWh battery storage facility. Ørsted, formerly DONG Energy, is the world's largest offshore wind developer. Ørsted has constructed 3.8 GW of offshore wind capacity over the past 25 years and has another 5 GW under construction. Eversource is New England's largest energy provider and is slated to develop and construct the project's onshore transmission system.

The project would use New Bedford as the construction area and the base of its operations and maintenance throughout the project's lifetime. Brayton Point in Somerset, MA will be the grid connection location for the project and the home of the battery storage facility. The project would result in the development of the first Jones Act compliant installation and transportation vessels.

In their proposal, the company stated that they are the furthest along in the ISO-NE interconnection queue process compared to the other two eligible bidders. Their completed Feasibility Study shows that either of the two projects can interconnect into Brayton Point without any system upgrades. The timeline of the project was not publicly released.

Bay State Wind asserts that the scale of its proposed projects will better allow Massachusetts to become "the hub of the offshore wind industry in Massachusetts" and that Ørsted's "develop, build, own, and operate" model ensures that it is vested in the long-term success of its wind farms, compared to other developers.

DEEPWATER WIND

Deepwater Wind proposed either a 200 MW or 400 MW wind farm, called Revolution Wind, with a commercial operation date (COD) in 2023. Deepwater Wind also appears to have submitted an expandable offer, the details of which were redacted. It proposed an initial 144 MW phase of the project in response to Massachusetts' 83D solicitation for 9.45 TWh of clean energy. The state will announce the winners of that RFP on January 25, 2018.

In contrast to Bay State Wind and Vineyard Wind, Deepwater Wind's value proposition is focused on the economies offered by the gradual and sequenced development of the offshore wind industry from smaller to larger wind farms. This strategy leverages off existing its existing OSW project and contract to develop another OSW project. Deepwater Wind built the 30 MW Block Island Wind Farm in 2015 and 2016 and has a contract with Long Island Power Authority to build the 90 MW South Fork Wind Farm foundations in 2021 and install the turbines in 2022. Deepwater Wind proposes to build the Revolution Wind foundations in 2022 and install the turbines in 2023. We believe that its redacted expandable proposal provides for subsequent phases of the Revolution Wind project to further develop the OSW supply chain. Deepwater Wind asserts that its approach avoids a "boom-bust cycle." Presumably, the pricing for the expandable offer reflects projected economies that will be realized from the development of the OSW supply chain.

The proposal includes an agreement with the Northfield Mountain Generating Station, a pumped-storage hydroelectric plant in Northfield, MA. If the Distribution Companies select this Storage Feature, the facility would store energy generated by the wind farm during off-peak hours and deliver energy to electric utilities during on-peak hours.

Deepwater Wind also partnered with GridAmerica Holdings Inc. (a National Grid subsidiary) to develop the Project interconnection and an offshore transmission network. The network could support up to 1,600 MW of wind energy for Revolution Wind and future wind farms. Revolution Wind would connect to the Brayton Point substation in Somerset, MA (1,000 MW) and to Davisville substation in North Kingstown, RI (600 MW), and will be operated and maintained in New Bedford, MA. The project is set to begin construction in 2022 if approved, and commence operations in 2023. Deepwater Wind is the developer of the Block Island Wind Farm off the coast of Rhode Island, which is the United States' first commercial offshore wind farm and another GridAmerica affiliate constructed the Block Island Transmission System for the interconnection into Rhode Island.

VINEYARD WIND

Vineyard Wind, a joint venture of Avangrid Renewables and Copenhagen Infrastructure Partners, submitted proposals for either a 400 MW or 800 MW wind farm. For the 400 MW project, the generation would be bundled with Vineyard Connector 1, which is an 800 MW expandable transmission project. Vineyard Wind Connector 2 is an optional phase two of the expandable transmission project, which would have another 800 MW of capacity. For their 800 MW project, Vineyard Wind is bundling Vineyard Wind 1 and Vineyard Wind 2, each a combined generation and transmission project with individual capacities of 400 MW. An optional phase would be Vineyard Wind Connector 2, an expandable transmission project, which would have another 800 MW of capacity. The lines would interconnect to Barnstable, MA, and West Barnstable, MA. Vineyard Wind would use Vineyard Haven, MA as its site for the operations and maintenance port during the life of the project.

The 400 MW project would have a COD of December 2021, which Vineyard Wind claims to be the earliest possible project in Massachusetts given its position as the "most mature and most advanced" large scale wind project as evidenced by its recent December 2017 applications for a federal Construction and Operations Plan with BOEM and with the state Energy Facilities Siting Board. The second 400 MW would be commissioned in 2022. Vineyard Wind has a Community Benefits Agreement and letters of support from local fishermen and all six towns on Martha's Vineyard plus Nantucket.

Vineyard Wind would establish a $15 million Massachusetts Offshore Wind Accelerator Program to support upgrade of local ports for staging, support set-up costs for supply chain companies, training local workers and investing in new technologies to protect marine species. Vineyard Wind would also establish a self-sustaining Resiliency and Affordability Fund that invests in local energy storage facilities.

Avangrid, Inc. owns regulated utilities and renewable energy assets throughout the United States including Unitil, one of Massachusetts' electric utilities. Avangrid Renewables, another one of Avangrid's subsidiaries, recently won BOEM's competitive lease auction for a wind lease area off the coast of North Carolina. Copenhagen Infrastructure Partners is a fund management company that has developed and invested in large offshore wind projects worldwide.

Power Advisory would welcome the opportunity to assist clients in assessing opportunities in the US offshore wind market, especially the upcoming BOEM Massachusetts and NY lease sale auctions, submission of comments on the 83C RFP, and participation in subsequent solicitations.