



# DEEPWATERWIND

Clean energy is just over the horizon.®

Offers this Proposal for the sale of energy and RECs from offshore wind projects:



**REVOLUTION** WIND



**INDEPENDENT** WIND

in response to:

The Request for Proposals for Long Term Contracts for Renewable Energy

RFP Issuance Date: September 12, 2018

Submission Date: October 29, 2018

submitted to:

The Narragansett Electric Company d/b/a National Grid

Bidder: Deepwater Wind, LLC on behalf of a to-be-formed affiliate.

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Certain data contained in this document or electronic file, as well as the appendices listed below, which hereby forms a part of the Proposal have been submitted in confidence and contain trade secrets or proprietary information, and the Bidder requests confidential treatment of such parts of the Proposal as provided in Section 3.4 of the Request for Proposals. The Bidder recognizes that confidential information is governed by the “Access to Public Records Act,” R.I. Gen. Laws § 38-2-1 et seq. The Bidder requests that the data marked with a double blue underline not be disclosed as such information is confidential and proprietary and exempt from disclosure.

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## **Appendices**



Appendix 7-2: Financial Organization Chart

Appendix 7-3: [Reserved]



Appendix 8-2: BOEM Lease OCS-A 0486 and OCS-A 0487

[Appendix 8-3: ProvPort Option Agreement](#)



Appendix 11-1: O&M Plan



Appendix 13-1: Management Organizational Chart

Appendix 13-2: Deepwater Wind Management Resumes





## Section 1 Certification, Project and Pricing Data

*The Certification, Project and Pricing Data (“CPPD”) document is a Microsoft Excel workbook that is provided on the website at [www.ricleanenergyrfp.com](http://www.ricleanenergyrfp.com).*

*Bidders are required to provide firm pricing for 270 days from the date of bid submission. The bidder must also sign the certification form in Part II of the CPPD verifying that the prices, terms and conditions of the proposal are valid for at least 270 days. An officer or duly authorized representative of the bidder is required to sign the Proposal Certification Form*

Deepwater Wind, LLC, a Delaware limited liability company, on behalf of a to-be-formed affiliate<sup>1</sup>, (the “Bidder” and, together with other entities of the Deepwater Wind group, “Deepwater Wind” or the “Company”) submits this proposal to The Narragansett Electric Company d/b/a National Grid (“National Grid”) (together with its appendices, this “Proposal”) in response to the request for proposals issued on September 12, 2018 (the “Renewable Energy RFP”).

The Bidder is proposing the development of two new offshore wind energy generating facilities – the Revolution Expansion and the Independent Wind project (each a “Proposed Project” and together the “Proposed Projects”), described below and detailed in Section 3.4:

- **Revolution Expansion** is the addition of incremental offshore wind turbines, having a collective nameplate capacity of approximately 100 MW, to the Revolution Wind Project (defined below). In May 2018, Deepwater Wind was selected by National Grid to negotiate a 400 MW power purchase agreement (the “RI 400 MW Contract”), and in June 2018, Deepwater Wind was selected by Connecticut DEEP to negotiate a separate 200 MW power purchase agreement (the “CT 200 MW Contract”). The 600 MW generating facility to be constructed to serve both the RI 400 MW Contract and the CT 200 MW Contract is referred to herein as the “Revolution Wind Project” and the approximately 100 MW generating facility offered here is referred to as the “Revolution Expansion.” Both the Revolution Wind Project and the Revolution Expansion are expected to be located in the Bureau of Ocean Energy Management (“BOEM”) Rhode Island-Massachusetts Wind Energy Area, which consists of Leases OCS-A 0486 and OCS-A 0487 (the “RI-MA WEA”), have the same Point of Interconnection (“POI”), and have a commercial operations date (a “COD”) in [REDACTED].

<sup>1</sup> In accordance with requirement 2.2.3.3 of this Renewable Energy RFP, we note that BOEM Leases OCS-A 0486 and OCS-A 0487, which comprise the RI-MA WEA in which the Revolution Expansion and Independent Wind will be located, are held by Deepwater Wind New England, LLC, as detailed in **Section 7.2.5**.

- **Independent Wind** is a new offshore wind project having a nameplate capacity of approximately 350 MW, located in the RI-MA WEA, having its POI at National Grid's Kent County substation<sup>2</sup> and with an expected COD in [REDACTED]

The RI-MA WEA, which consists of BOEM leases OCS-A 0486 or OCS-A 0487, and which will be the site of both Revolution Wind and Independent Wind, is referred to herein as the "Project Site".

With this Proposal, the Bidder provides multiple offers, based on alternative configurations of the Proposed Projects, each representing a bundled, levelized price for all energy and renewable energy certificates, as detailed in Table 1-1 (each, an "Offer" and collectively, the "Offers").

**Table 1-1: The Offers**

	Offer #1	Offer #2	Offer #3	Offer #4
Project	Revolution Wind		Independent Wind	
Nameplate Capacity	104 MW		352 MW	
Projected COD	[REDACTED]		[REDACTED]	
Estimated 2012 Annual Energy Production <sup>3</sup>	[REDACTED]		[REDACTED]	
P50 <sup>4</sup> Annual Energy Production	[REDACTED]		[REDACTED]	
Point of Interconnection	The Revolution Wind POI, as defined in Section 3.4		National Grid's Kent County substation, as further detailed in Section 3.4	
Contract Tenor	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Levelized Price	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
CPPD Form	Appendix 1-1		Appendix 1-2	

<sup>2</sup> National Grid's Kent County substation is the POI design basis for the Independent Wind project. Deepwater Wind may, in connection with the ISO-NE interconnection process, elect to modify the Independent Wind POI design basis, however such modification will not change the Bidders offering herein.

<sup>3</sup> The values provided here reflect the 2012 weather year, per the requirements of the Renewable Energy RFP, and not the long-term, weather-normalized P50 energy production.

<sup>4</sup> "P" values refer to the probability of a level of energy output. "P50" refers to the 50th percentile and means that there is a 50% chance that the actual output will be greater than this amount and a 50% chance that the actual output will be less than this amount. "P99" refers to the 99th percentile and means there is 99% chance that the actual output will be greater than this amount. The values here reflect the weather normalized P50 energy production.

	Offer #1	Offer #2	Offer #3	Offer #4
Contingency; Other Bids	These offers are positively contingent on RI PUC approval of the RI 400 MW Contract. They are not negatively contingent on any other bid.		The Bidder has not offered Independent Wind to any other entity and these offers are not positively or negatively contingent on any other bid.	

The Bidder commits to inform National Grid of the status of other bids involving the Proposed Projects.

The required CPPD forms have been submitted as Microsoft Excel workbooks in the following Appendices:

**Appendix 1-1:**

**Appendix 1-2:**

The Bidder hereby confirms that the prices, terms and conditions offered herein are valid for 270 days from the date of bid submission. The required signed Proposal Certification Forms are attached as **Appendix 1-3:**

To demonstrate how this Proposal meets the requirements of this Renewable Energy RFP, we submit the following attachments:

**Appendix 1-4:**

**Appendix 1-5:**

**Appendix 1-6:**

## Section 2 Proposal Summary/Contact Information

*The Proposal Summary and Contact Information must be entered into the CPPD Microsoft Excel workbook document that will be provided in SECTION 1.*

See the attached CPPDs referenced in **Section 1**. Contact information is also provided here for convenience.

Company Name:	Deepwater Wind, LLC
Company Address:	56 Exchange Terrace, Suite 300 Providence, RI 02903
Company Telephone:	(401) 868-4228
Company Fax:	(401) 228-8004
Primary Point of Contact:	Clinton Plummer, Vice President of Development Phone: (631) 938-6567 Fax: (631) 881-4383 Email: <a href="mailto:cplummer@dwwind.com">cplummer@dwwind.com</a>

## Section 3 Executive Summary

*The bidder is required to provide an executive summary of the project proposal that includes a complete description of the proposed generation, the delivery point located within ISO-NE, the proposed contract term and pricing schedule, and other factors the bidder deems to be important.*

### 3.1 **Introduction**

Deepwater Wind is honored to have been selected by the State of Rhode Island in May 2018 for the opportunity to negotiate a contract with National Grid for 400 MWs of offshore wind.

With this Proposal, the Bidder offers National Grid two new offshore wind farms, the proposed terms and pricing of which are detailed in **Table 1-1**. The Proposed Projects are each consistent with Rhode Island's Long-Term Contracting Standard for Renewable Energy (the "LTCS") and in accordance with the state's "Rules and Regulations Governing Long-Term Contracting Standards for Renewable Energy" because each will:

1. Stabilize long-term energy prices by committing to fixed pricing over the full term of its PPA.
2. Enhance environmental quality by delivering utility-scale clean power that will offset millions of tons of emissions of the life of the project.
3. Create jobs in Rhode Island in the renewable energy sector by committing to use the state's port facilities and Rhode Island union labor, as well as Rhode Island-based vendors.
4. Facilitate the financing of renewable energy generation that will provide direct economic benefit to the state by offering cost-effective energy pricing and a series of local investments that would not be realized through competing offers.

If either of the Proposed Projects is selected, the Bidder will make an investment of [REDACTED] in building Rhode Island's infrastructure and capacity to compete in the offshore wind industry. This sum is in addition to the commitments the Deepwater Wind previously made in association with the RI 400 MW Contract. Deepwater Wind proposes to allocate this incremental [REDACTED] investment to two principal purposes. [REDACTED], in addition to prior commitments associated with the RI 400 MW Project. Taken together, with our commitments under the RI 400 MW Contract, this represents an investment of [REDACTED] in Rhode Island port facilities. This investment will strengthen Rhode Island's position in the offshore wind industry throughout the northeast as multiple projects are deployed in the region in the coming decades. Second, the Bidder commits to investing a further [REDACTED] through a series of economic development programs to be developed in consultation with the Rhode Island Office of Energy Resources and the Rhode Island Department of Commerce.

In addition to the intrinsic environmental and economic benefits the Proposed Projects, National Grid should select one or both of the Proposed Projects for the following reasons:

- Each allows National Grid to purchase additional offshore wind energy at [REDACTED] Pricing details are available in the CPPD form and **Section 1**.
- Each will further develop a local offshore wind industry which, as detailed above and in **Section 3.2**, will significantly benefit the State of Rhode Island through more jobs and investment and less air pollution emissions and reliance on fossil fuel sources of energy.
- Each fully satisfies the evaluation criteria outlined in the RFP, detailed in **Appendices 1-4 and 1-5**.
- Each Proposed Project is expected to result in meaningful reductions in greenhouse gas and other emissions, which will contribute to Rhode Island's emissions reduction goals, **Section 9.8**.
- As demonstrated by the letters of support and media highlights reference in **Section 9.4**, the Bidder has been active in educating businesses and residents about the benefit of offshore wind and its plans for additional projects, as well as planning for construction and deepening its understanding of how it can best align with Rhode Island's economic development goals.
- The Proposed Projects are being offered by America's leading offshore wind developer, and the only company to have successfully navigated the technical, environmental, regulatory, economic and financial challenges involved in offshore wind development in the United States, as detailed in **Section 13..**
- Deepwater Wind's management team is highly experienced in the development and financing of renewable energy facilities, as detailed in **Section 7.1.1**.

### 3.2 *Why Choose Offshore Wind in this Solicitation*

The American offshore wind industry is maturing rapidly. Now is the time for an incremental investment in this industry – before larger states begin a series of procurements. Timing for this additional commitment to offshore wind is critical:

- ***Federal Investment Tax Credit Is Expiring*** – The federal Investment Tax Credit (and the federal Production Tax Credit) is scheduled to expire in the coming years. Projects must qualify for the last tranche of the credit prior to the end of 2019. Future renewables solicitations are not likely to benefit from this federal incentive. [REDACTED]
- ***A Relatively Small Procurement with a Large Jobs Impact*** – With neighboring states poised to procure several gigawatts of new offshore wind projects, this Bid will make further investments in Rhode Island’s offshore wind infrastructure, strengthening Rhode Island’s ability to compete against larger states. These new investments are tied to a modest amount of incremental offshore wind capacity. Given Rhode Island’s existing offshore wind commitments, the additional investments in local ports and supply chain proposed here are natural and well-timed supplements.
- ***Jobs and Economic Development*** – Rhode Island has been a leader in the American offshore wind industry, from standing up America’s first offshore wind farm, to participating in the first large-scale competitive offshore wind procurement in the country. Continuing to invest in offshore wind projects will make Rhode Island an attractive location for businesses related to offshore wind development and construction.
- ***Delivering Renewable Energy in Rhode Island*** – Offshore wind has the unique ability to address regional energy supply challenges by delivering large quantities of clean energy when and where it is needed. A recent study by AWS Truepower found that offshore wind will operate at a high level of output during the coldest winter days and, as a result, offshore wind will significantly mitigate price spikes during cold winter periods<sup>5</sup>.
- ***Keeping our Energy Dollars in Rhode Island*** – As Rhode Island’s only large-scale energy resource, offshore wind is the best opportunity to reduce energy imports. Creating energy within the state of Rhode Island will spur job creation and business development, both of which contribute to the local economy.

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<sup>5</sup> Wilson, Whitney. “Offshore Wind: Mitigation of Natural Gas Based Market Price Spikes during Extreme Cold Weather Conditions.” AWS Truepower. Online. Available: [https://www.awstruepower.com/assets/Offshore-Wind-Mitigation-of-Natural-Gas-Based-Market-Price-Spikes-During-Extreme-Cold-Weather-Conditions\\_Wilson\\_Oct2014.pdf](https://www.awstruepower.com/assets/Offshore-Wind-Mitigation-of-Natural-Gas-Based-Market-Price-Spikes-During-Extreme-Cold-Weather-Conditions_Wilson_Oct2014.pdf)

### 3.3 *Introduction to the Bidder*

Deepwater Wind is the only company to have successfully navigated the permitting, legal, financial, installation and operational challenges of offshore wind in the US. In addition to building the first offshore wind farm in the US in Rhode Island waters, Deepwater Wind was also awarded the second (the 90 MW South Fork Wind Farm for Long Island) and third (the 120 MW Skipjack Wind Farm for Maryland) US offshore wind revenue contracts, and has been awarded opportunities to negotiate contracts to supply Rhode Island and Connecticut with an additional 400 MW and 200 MW of offshore wind power, respectively.

Deepwater Wind developed, financed, built and now operates the 30MW Block Island Wind Farm (BIWF), the first offshore wind farm in America. As further detailed in **Section 11**, this groundbreaking project required Deepwater Wind to secure more than 20 federal, state and local approvals. The BIWF project was developed and constructed with commercial financing provided by industry-leading equity and lending partners. This financing effort was awarded Renewable Energy Deal of the Year in 2015 by Project Finance International and IJ Global. The construction of BIWF was completed in the summer of 2016 on-budget, on-schedule and with excellent environmental and safety records.

In connection with the BIWF project, Deepwater Wind also fully developed the Block Island Transmission System (“BITS”, now known as “Sea2Shore”) – a 30-mile onshore and offshore transmission system connecting Block Island to the mainland of Rhode Island for the first time. This was the first offshore renewable energy transmission system developed in the United States. Deepwater Wind sold this transmission system to National Grid at the commencement of construction and worked closely with National Grid to achieve a successful joint engineering-procurement-construction effort to bring the system on-line concurrently with the BIWF project.

The BIWF project was a landmark project that has launched a vastly larger effort to develop utility-scale offshore wind farms in the United States, a new industry which Deepwater Wind continues to lead.

In January 2017, the Long Island Power Authority (“LIPA”) Board of Directors approved a PPA for Deepwater Wind’s South Fork Wind Farm, the first in the State of New York. This award was the result of a competitive solicitation to provide new sources of energy and capacity to Long Island’s constrained south fork. The South Fork Wind Farm is the first phase of development in the RI-MA WEA – the same site as the Revolution Wind Project. At the time of this proposal, Deepwater Wind is conducting surveys of the RI-MA WEA in connection with the South Fork Wind Farm that can be leveraged to support the development of the Revolution Wind Project and/or Independent Wind.

Deepwater Wind is also developing the first offshore wind farm to serve the Mid-Atlantic region. In May of 2017, the Maryland Public Service Commission approved Deepwater Wind’s application to build the Skipjack Wind Farm northeast of Ocean City, Maryland. Deepwater Wind was also awarded 120 MWs of Offshore Wind Renewable Energy Certificates (“ORECs”), the first award of its kind in the Mid-Atlantic region.



In 2018, the states of Rhode Island and Connecticut selected Deepwater Wind's Revolution Wind for opportunities to negotiate power purchase agreements to serve New England as follows:

- 400 MWs for Rhode Island announced May 23, 2018, and
- 200 MWs for Connecticut announced June 13, 2018

Deepwater Wind's experience in the successful development of the Block Island Wind Farm and other projects is an important part of our plans for both the Revolution Expansion and the Independent Wind Projects, including: engineering, described in **Section 10**, permitting, described in **Section 9**; and operations and maintenance, described in **Section 11**. The engineering, constructing and operating plans the Proposed Projects are substantially similar to the methods that were employed for the Block Island Wind Farm.

### 3.4 Project Definition

The design basis for each of the Proposed Projects is provided in **Table 3-1**. Engineering details regarding the Wind Farms, the Delivery Facilities and Interconnection Facilities are provided in **Section 10** and **0**, respectively. Commercial details regarding the Offers are provided in **Table 1-1**.

**Table 3-1: Project Definition**

	REVOLUTION EXPANSION	INDEPENDENT WIND
<b>Wind Farm Design Basis</b>	The Proposed Projects will be constructed using the same technology as the Revolution Wind Project. The Wind Farm will consist of (a) purpose-built offshore wind turbine generators (“WTG”), which will be installed atop (b) foundations designed for the site-specific subsurface conditions and connected by (c) submarine inter-turbine array cables to an offshore substation. Deepwater Wind has designed the Project using the Siemens 8.0 – 167 WTG. Deepwater Wind is also in discussions with other world-class manufacturers, such as General Electric and MHI Vestas, about suitable alternative offshore WTGs (some having ratings of 12 MW or more). The final WTG selection will be made following a thorough selection process.	
<b>Design Basis Nameplate Capacity</b>	[REDACTED]	[REDACTED]
<b>Target Commercial Operations Date</b>	[REDACTED]	[REDACTED]
<b>Wind Farm Siting and Real Property Rights</b>	The Proposed Project will be located in federal waters on the Outer Continental Shelf (OCS) in the RI-MA WEA. Deepwater Wind holds both federal leases for the RI-MA WEA, and no additional real property rights are needed offshore. The Proposed Projects are being sited to avoid obstructions and minimize potential conflicts with existing marine and terrestrial uses.	

	REVOLUTION EXPANSION	INDEPENDENT WIND
<b>Interconnection and Delivery Point</b>	The output of the Revolution Expansion will be delivered to the same point on the ISO-NE bulk transmission system as that of Revolution Wind, which is defined in the RI PPA as the Pool Transmission Facilities (“PTF”), either as an interconnection to the Brayton Point or Pottersville substation in Somerset, Massachusetts or a tap of the lines into the Davisville substation in North Kingstown, Rhode Island (the “ <u>Revolution Wind POI</u> ”). Deepwater Wind holds ISO-NE Queue Position #781 at the Davisville substation, and ISO-NE Queue Positions #669 and #701 at Brayton Point, either of which would allow for delivery of the output of the Revolution Wind Project and the Revolution Wind Expansion.	The output of Independent Wind will be delivered to the ISO-NE bulk transmission system at National Grid’s Kent County Substation. Deepwater Wind holds ISO-NE Queue Position #782 at Kent County Substation, which will allow for delivery of up to 352 MW.
<b>Delivery Facilities Design Basis</b>	To serve the RI 400 MW Contract and the CT 200 MW Contract, Deepwater Wind plans to construct “ <u>Delivery Facilities</u> ” having a capacity of approximately 700 MW, which will consist of (a) an offshore substation connected to the Project’s Collection Facilities (as defined in <b>Section 10</b> ), (b) submarine HVAC cables from the offshore substations to a new landfall location, (c) buried terrestrial HVAC connecting the cable landfall to the new onshore substations and (d) the new onshore substation, including all the equipment required to interconnect with the electric grid. The Revolution Expansion will use the same Delivery Facilities as the RI 400 MW Contract.	The Bidder plans to construct separate Delivery Facilities for the Independent Wind which will consist of the same components as those for Revolution Wind, but will have the capacity to deliver approximately 350 MW to the Kent County Substation.
<b>Siting, Routing and Real Property Rights</b>	Deepwater Wind has identified a set of preferred routes that avoid the highest-traffic areas and environmental sensitivity. The offshore segments of the Delivery Facilities’ export cables will traverse federal waters on the OCS, as well as Rhode Island state waters. Deepwater Wind’s BOEM leases provide the required real property rights for the portion of the cable on the OCS. All onshore portions of the Delivery Facilities will be located on lands owned by public entities for which existing processes allow the acquisition of real property rights.	

	REVOLUTION EXPANSION	INDEPENDENT WIND
<b>Delivery Facilities Roles and Responsibilities</b>	Grid America Holdings, Inc. has the right to acquire the Revolution Wind Delivery Facilities pursuant to certain terms and conditions. Deepwater Wind will be responsible for the development and construction of the Revolution Wind Delivery Facilities, including obtaining all rights and approvals necessary for its operations, in consultation with Grid America Holdings. If Grid America Holdings acquires the Revolution Wind Delivery Facilities, Grid America Holdings will provide transmission service to the Revolution Wind Project under the terms of a Transmission Services Agreement (“TSA”).	No third party has any rights to the Independent Wind Delivery Facilities. Deepwater Wind will be responsible for the development, construction, and operations of these portions of the Independent Wind Delivery Facilities.
<b>Construction Ports</b>	Deepwater Wind plans to use several ports in Rhode Island for the Proposed Project. As detailed in <b>Section 14</b> , both Revolution Expansion and Independent Wind are expected to create extensive regional jobs in southern New England over its development and construction period, and to contribute to the development of a robust and enduring regional supply chain that can be utilized to support offshore wind projects that will serve other states. The proposed [REDACTED] investment in RI Port Facilities as part the Proposed Projects will cement a grand total of [REDACTED] in RI Port Facilities by Deepwater Wind, infrastructure improvements that will position the state as an integral part of the offshore wind industry in north east, resulting in long term job creation benefits beyond the its renewable energy commitments.	
<b>Shared Supply Chain</b>	<p>The 90 MW South Fork Wind Farm will be the next offshore wind farm to be constructed in America, and the first in the RI-MA WEA. Deepwater Wind plan to make significant investments in the regional supply chain to support the fabrication and installation of the South Fork Project’s foundations in 2021 and the marshalling and installation of its wind turbines in 2022. Deepwater Wind has planned the construction of the Revolution Wind Project and the Revolution Expansion to dovetail with the South Fork Project’s construction. Foundation work will begin in 2022 and wind turbine work in 2023. By aligning schedules and using a shared supply chain, Deepwater Wind can deliver the Proposed Project for the low prices offered in this Proposal. The Independent Wind Farm creates another year of construction activity, with its foundation work taking place in 2023 and turbine work in 2024.</p> <p>By accepting one or both of the Proposed Projects, Rhode Island will not only benefit from Deepwater Wind’s strategy of creating a shared supply chain, but it will also contribute to the virtuous cycle of making the shared supply chain stronger, contributing to lower prices for future projects.</p>	

### 3.5 ***Other Bids***

*The bidder is required to disclose whether it has or plans to bid the project in other Requests for Proposals; if this is the case, the bidder is required, on an on-going basis, to inform National Grid of the status of those bids.*

See **Table 1-1** in **Section 1**.

## Section 4 Pricing Information and Schedules

*The bidder is required to provide separate prices for energy and RECs, in accordance with pricing options in Section 2.2.4.2.1, and conform to the conditions in Section 2.2.4.2.2. Pricing information and schedules must be entered into the CPPD Microsoft Excel workbook document that will be provided in SECTION 1.*

Please see **Section 1**, as well as the CPPDs attached as **Appendix 1-1** and **Appendix 1-2**. Please see **Appendix 4-1**, which provides our referenced price forecast from Sustainable Energy Advantage.

## Section 5 Project Operational Parameters

### 5.0 *Approach to Operations*

The Proposed Projects are designed to provide a reliable, consistent energy production profile that National Grid can rely upon for cost-effective clean energy, built locally.

The Bidder will install the Proposed Projects in an area with a superb wind energy resource that will result in the peak-coincident energy production profile detailed in **Section 6**.

The Bidder will install proven offshore wind turbines, detailed in **Section 10**, and implement a proven operations and maintenance program, detailed in **Section 11**.

Once operational, the Proposed Projects will deliver energy and RECs into ISO-NE's SEMA/RI Zone, which benefits Rhode Island ratepayers by moderating system peak load, lowering wholesale electric market costs and reducing emissions from local fossil power plants.

### 5.1 *Maintenance Outage Requirements*

*Maintenance Outage Requirements – Specify partial and complete planned outage requirements in weeks or days for all generation facilities and transmission facilities. Also, list the number of months required for the cycle to repeat (e.g., list time interval of minor and major overhauls, and the duration of overhauls).*

#### 5.1.1 **Wind Farms**

Deepwater Wind is the only company with experience operating and maintaining an offshore wind farm in America. Our experience operating the Block Island Wind Farm is described in **Section 11**. The Company plans to implement an operations and maintenance program for the Project that builds upon lessons learned from this experience and that is intended to maximize project availability, as further detailed in **Section 11**.

Deepwater Wind will schedule approximately one week of planned maintenance per turbine and approximately one week of unplanned maintenance per year, which is consistent with industry standards for wind turbines of this type.

Planned maintenance will be scheduled during low-wind periods of the year, generally expected to be during the summer. For most maintenance activities, only a subset of turbines is offline during the maintenance period, allowing the Projects to continue to deliver power during maintenance activities.

Unplanned maintenance is in response to turbine issues that cannot be resolved remotely. To minimize the duration of unplanned maintenance outage requirements, Bidder will monitor individual turbine performance 24 hours per day and 365 days per year at a Remote Operations Center (“ROC”). In response to a turbine fault, the ROC will remotely execute an approved custom fault handling procedure to restore the faulted turbine to normal operations. If the ROC is unable to restore the turbine to normal operations, on-call technicians will be deployed to the specific turbine via the project crew transfer vessel for local intervention.

Planned and unplanned maintenance represents a reduction in the turbine’s annual availability of only 3.0%, which has been accounted for in the annual availability figure and net capacity factor calculation. Unplanned maintenance is assumed to be slightly greater than normal in the first year of commercial operations, which translates to a slightly lower net capacity factor in year one.

#### 5.1.2 Delivery Facilities

**Land Cable:** A two-day outage will be required to inspect the manholes within six months from in-service date. If the manholes are found to be in acceptable condition, a second two-day cable outage will be required within 24 months of the first inspection. If the manholes are found to be in acceptable condition after the second inspection, a two-day cable outage will be required approximately every 36 months thereafter to inspect the condition of the equipment within the manholes. These manhole inspections will be coordinated with planned maintenance outages of the wind turbines when possible.

**Submarine Cable:** No outages will be required for maintenance of the submarine cable.

**Substations:** No outages will be required for maintenance of substation equipment

## 5.2 Operating Constraints

*Operating Constraints – Specify all the expected operating constraints and operational restrictions for the project (i.e., limits on the number of hours a unit may be operated per year or unit of time).*

#### 5.2.1 Wind Farms

The Projects’ operating constraints are limited to wind resources and maintenance/grid outages. The expected seven days of planned maintenance for each wind turbine will be scheduled during periods of low winds during the summer months. This allows most planned maintenance tasks can be accomplished with minimal impact on the Projects’ annual energy production profile.

#### 5.2.2 Delivery Facilities



Subject to the completion of the interconnection process, and with the network upgrades that are being identified through that process, there will be no transmission system operating constraints for the Delivery Facilities.

### 5.3 *Reliability*

*Reliability – Describe how the proposal would provide enhanced electricity reliability to Rhode Island, including its impact on transmission constraints.*

Both the Revolution Expansion and the Independent Wind Projects will add to the reliability of the New England Transmission system by physically delivering power into ISO-NE's SEMA/RI zone. Deepwater Wind's analysis suggests that the Projects will also ease transmission constraints because of its interconnection location in southern New England.

Deepwater Wind has commissioned interconnection studies **Appendix 5-1** for the Projects. These analyses, described in **Section 8.6**, show that few upgrades are required to make the output of the Projects' interconnection deliverable.

Once operational, the output of the Proposed Projects will be scheduled by Bidder's ROC through the use of short-term wind forecasting, which will coordinate with the interconnecting transmission owner and ISO-NE.

## Section 6 Energy Resource and Delivery Plan

### 6.1 *Energy Resource Plan*

*For Eligible Facilities, the bidder is required to provide an energy resource or fuel supply plan for its proposed project, including supporting documentation. The fuel supply/energy resource profile information should be consistent with the type of technology/resource option proposed and the term proposed. The information requested is organized according to the type of project or energy resource. Bidders should respond to all information requests which are relevant to the bid in a timely manner.*

#### *Wind Energy Projects*

*Provide a summary of all collected wind data for the proposed site. Identify when the data was collected and by whom.*

*Indicate where the data was collected and its proximity to the proposed site. Include an identification of the location and height for the anemometers that were used to arrive at an assessment of the site generation capability.*

*Provide (a) at least one year of hourly wind resource data, and (b) a wind resource assessment report from a qualified unaffiliated third-party wind resource assessment firm. Include an analysis of the available wind data which addresses the relationship between wind conditions and electrical output. Provide a projection of net hourly energy production or net annual energy production, including projections of average net hourly energy production, based on the wind resource data (a 12 x 24 energy projection) at both P50 and P90 levels. If providing hourly profile data in Part V, of the CPPD, wind projects are required to provide an hourly profile specific to 2012 weather patterns.*

A high-quality energy resource and delivery plan is important for engineering, project financing, interconnection, and operations. Deepwater Wind has demonstrated experience developing such a plan based on our experience as the only company in America to have engineered, financed, interconnected and operated an offshore wind farm.

Data is critical to an effective energy resource plan. Deepwater Wind has gathered, or is in the process of gathering, an unprecedented level of data through its long-term development of the Projects' site, its experience developing and operating the Block Island Wind Farm, and its ongoing development of the South Fork Wind Farm.

Deepwater Wind engaged AWS Truepower to prepare long-term wind resource and energy production estimates for its planned developments in the Project Site. The first deliverable from this engagement is the Wind Resource Assessment Plan for the South Fork Wind Farm, which is attached as **Appendix 6-1**. The Proposed Project's energy resource will use many of the same data sources as the South Fork Wind Farm, including:

- Deepwater Wind’s existing proprietary data collected in connection with the Block Island Wind Farm and the South Fork Wind Farm;
- Existing publicly-available data collected from multiple regional sources, such as the recently-deployed MassCEC / WHOI LiDAR station south of Martha’s Vineyard;
- Deepwater Wind’s planned deployment of a Light Detection and Radar (LiDAR) buoy in the Project Site;
- Mesoscale models prepared by AWS Truepower, based on data from the other sources.

Figure 6-1 below shows the existing and planned sources of data used in the Proposed Projects’ energy delivery plan and includes AWS Truepower’s current mesoscale model of the regional wind energy resource. Details of the existing data are summarized in the reports from AWS Truepower attached as *Appendix 6-2*.



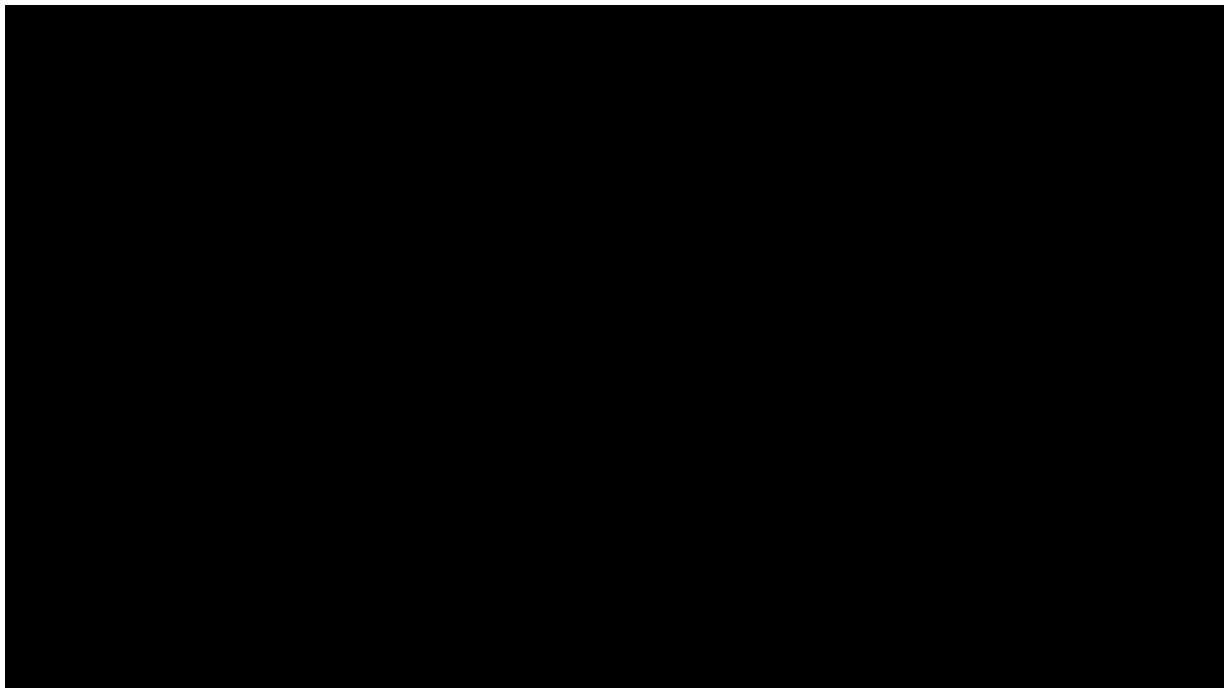
The specific sources of data for the Project’s energy resource plan, as depicted in Figure 6-1, are described in Table 6-1 below.

**Table 6-1: Wind Resource Data Collected for the Project**

Monitoring Device	Site	Description	Period of Record
MassCEC / WHOI LiDAR Platform	Southeast of Martha's Vineyard	MassCEC, WHOI, and AWS Truepower installed a LiDAR on a WHOI-owned platform located one mile south of Martha's Vineyard in order to collect wind data near federal offshore wind energy areas.	October 2016 – Present
BUZM3	Buzzard's Bay CMAN Station	The Coast Guard maintains a weather observation station on this aid to navigation which is only 14 miles from the Project Site.	April 1997 – Present
Chatham Rawinsonde	Chatham, MA	Chatham releases a rawinsonde (weather balloon) collecting data at 288 meters (m) above ground level (AGL). This has provided over 17,000 observations and yields a truer depiction of the overlying synoptic weather pattern compared to surface measurements.	1971 – Present
WeatherFlow Block Island	Block Island Jetty	The weather station data set provides historical information to serve as a long-term correlation to Deepwater Wind's monitoring devices on Block Island.	December 2005 – Present
ZephIR 151 DWW Proprietary	Stony Brook University, School of Marine & Atmospheric Sciences, Southampton, NY	Deepwater Wind deployed a vertical LiDAR unit on Long Island in connection with the development of the South Fork Wind Farm.	August 2014 – Present
Mast 3813 DWW Proprietary	BI Coast Guard Station	Deepwater Wind's 60 m Met Tower on Block Island – the nearest land upwind of the site.	July 2009 – July 2012
ZephIR 151 DWW Proprietary	BI Coast Guard Station	Deepwater Wind deployed two vertical LiDAR units on Block Island in 2009. Following a validation campaign, these monitoring devices were moved to various locations on Block Island. They collected nearly three years of wind resource data at the Project's hub height.	October 2009 – April 2010
	BI Southeast Light		April 2010 – July 2012
ZephIR 156 DWW Proprietary	BI Coast Guard Station		July 2009 – October 2009
	BI North Light		October 2009 – July 2012
	Montauk, NY		

Airport Weather Observing Stations (AWOS)	Groton, CT	Data was collected from AWOS stations around the Project Site. These data were used as inputs to the mesoscale model and provide a long- term reference for the energy production estimate.	Varies by location
	Westerly, RI		
	Newport, RI		
	Block Island, RI		
	Vineyard		
	Nantucket		
University of Rhode Island (URI) Buoys	Southeast of Block Island and in BOEM Lease OCS-A 0486	URI deployed two for the purpose of ecological and meteorological monitoring. One of these buoys was in the Project Site. Deepwater Wind has received data from these buoys and has incorporated it into our wind resource assessment report.	November 2009 – November 2010

Based on the data, AWS Truepower estimates the Revolution Wind Farm site has an average annual wind speed of [REDACTED] **Figure 6-2** below shows selected data from opposite sides of the Project site. The consistency of these results demonstrates the uniformity of wind speed across the Project Site.



Using the data described above, AWS Truepower developed an indicative site layout for the Revolution Expansion that maximizes turbine performance by minimizing wake losses. Each of the offers described

in **Section 1** consists of a subset of the most cost-effective turbine locations identified by AWS. The final turbine layout will be based on geotechnical, engineering, permitting and stakeholder input.

The data described in **Table 6-1** above is the basis for the mesoscale modeling used to estimate wind speed in the Project Site. This modeling is summarized in the Lookup Table provided as **Appendix 1-6**.

*Provide a site-adjusted power curve. Each curve should list the elevation, temperature and air density used.*

*Identify the assumptions for losses in the calculation of projected annual energy production, including each element in the calculation of losses.*

*If your bid includes a delivery forecast which is substantially different than NREL data would suggest, please reconcile the differences.*

Additional AWS Truepower reports are provided in the following appendices:



## 6.2 Energy Delivery Plan and Profile

*Please provide an energy delivery plan and profile for the proposed project, including supporting documentation. The energy delivery profile must provide the expected Energy Generation to be delivered into the ISO-NE market settlement system and permit the Evaluation Team to determine the reasonableness of the projections for purposes of Sections 2.2.2.3 Eligible Products, 2.2.2.4 Allowable Contract Term and 2.2.2.5 Minimum Contract Size of the RFP. Such information should be consistent with the energy resource plan provided above and also considering any and all constraints to physical delivery into ISO-NE.*

*Regardless of the proposed technology, providing 8760 (or 8784) hourly data (over 12x24 averages) provides more granular data which ensures that the bidders units are modeled as accurately as possible, thereby reducing the approximations and assumptions made by the evaluation team.*

The Offshore Wind Projects will run at maximum generation level as per the power curve under normal conditions. Energy delivery will be in accordance with the terms of the PPA and consistent with ISO-NE

Rules and Procedures. Upon electric or verbal commands provided by ISO New England's Dispatch Center (e.g. curtailment), load can be regulated by the Project's Remote Operations Center (ROC) operators via SCADA controls.

Deepwater Wind's ROC will schedule the output of the Wind Farm per the terms of the PPA. All settlements will use the ISO-NE Settlement Market System.

Additionally, according to the Feasibility and Overlapping Impact Study provided in **Appendix 5-1** curtailment is not an issue, given the respective points of interconnection in southern New England.

### 6.3 *REC Delivery Plan*

*Please provide documentation demonstrating that the project will deliver GIS Certificates representing the associated RECs. For projects located outside of the ISO-NE control area, describe how the Delivered energy and associated RECs will satisfy NEPOOL-GIS rules for the Delivery of GIS Certificates.*

Deepwater Wind will utilize the New England Power Pool Generation Information System ("NEPOOL GIS") for tracking generation attributes in accordance with applicable rules and requirements. The Project is located inside New England. Delivering the attributes to the NEPOOL GIS is a well-established procedure. Deepwater Wind will deliver all environmental attributes per the terms of the PPA.

## Section 7 Financial/Legal

### 7.1 *Approach to Financing*

*Each bidder is required to submit information and documentation that demonstrates that a long term contract resulting from this RFP Process would either permit the bidder to finance its proposal that would otherwise not be financeable, or assist the bidder in obtaining financing of its proposal.*

#### 7.1.1 **Deepwater Wind Approach and Track Record**

During development and construction, the Proposed Projects will be funded by equity commitments from Deepwater Wind's investors. During construction and operations, it will be funded with a combination of debt, equity subscriptions, and potentially tax equity, mezzanine or other investments. The ability to finance and the cost of financing is very much a function of risk. Contracts that give a high level of certainty to revenue greatly enhance our ability to finance the Project and ultimately reduces the cost for the clean energy deliveries to ratepayers.

Deepwater Wind's financing of the Block Island Wind Farm was oversubscribed because multiple lenders expressed strong interest in both the Block Island project and Deepwater Wind's pipeline of further projects. Deepwater Wind has not yet entered into agreement for the financing of the Proposed Projects. However, it is confident in its ability to raise the equity capital required to fund the Proposed Projects, if selected, from existing and potential new investors if the following requirements are met: (i) revenue certainty in the form of a firm offtake agreement such as a PPA, (ii) executable/executed engineering, procurement and construction ("EPC") contract(s), (iii) site control in the form of an exclusive option or to purchase and (iv) permits.

#### 7.1.2 **Rationale for Long Term Contract**

Multiple potential suppliers have expressed interest in entering into EPC contracts. The Company is the holder of a lease issued by the U.S. Bureau of Ocean Energy Management for the Project Site and is highly confident in its ability to permit the Project, as detailed in **Section 9**. The universe of lenders and the resultant cost of financing are in large part a function of the certainty of revenues. Therefore, the PPA is the most critical element of securing financing for the Project.

Although the Bidder is submitting the required offer for a 15-year contract tenor, Deepwater Wind strongly prefers a 20-year contract tenor for several reasons. First, the contract negotiation opportunities previously awarded to Revolution Wind are based on 20-year contract tenures. Matching these 20-year contract tenure terms for the Proposed Projects will ensure such Proposed Project can achieve the most cost-effective borrowing terms, as reflected in the price differential between the 15 and 20-year Proposal pricing provided in Section 1. Second, debt and equity investors have only financed offshore wind projects with 20 or more years of contract tenure because expected Project lifetimes are 25 years or greater, and



any contract tenures less than 20 years would be seen by investors as taking on market risk from years 15 through 25, resulting in higher financing costs. Finally, financing the upfront capital needed for the project on a longer-term scale would likely result in lower debt service payments and thus, lower energy costs, as is indicated in the Proposal pricing in **Section 1**.

## 7.2 Business Entity Structure

*Please provide a description of the business entity structure of the bidder's organization from a financial and legal perspective, including all general and limited partners, officers, directors, managers, members and shareholders, involvement of any subsidiaries supporting the project, and the providers of equity and debt during project development. Provide an organization chart showing the relationship between the equity and debt participants and an explanation of the relationships. For jointly owned facilities, identify all owners and their respective interests, and document the bidder's right to submit a binding proposal.*

### 7.2.1 General and Limited Partners

Deepwater Wind Holdings is primarily owned by affiliates of the D.E. Shaw group, a global investment and technology development firm with approximately \$47 billion in investment and committed capital as of January 1, 2018. The D.E. Shaw group has helped to raise over \$10 Billion in capital for renewable energy projects in the US in recent years, making it one of the largest sponsors of renewable energy in the nation. An entity of the D.E. Shaw group was a principal owner of Boston-based First Wind Holdings prior to First Wind's sale in 2014.

### 7.2.2 Officers, Directors, Members, and Shareholders

Deepwater Wind has assembled an industry-leading Board of Managers consisting of both representatives of the Investors and independent industry experts. The Board consists of the following individuals and is responsible for governing Deepwater Wind and advising management as they develop projects:

NAME	TITLE	BIOGRAPHY
<b>Bryan Martin</b>	Board Chair	Managing Director of D. E. Shaw & Co., L.P. and co-head of the D.E. Shaw Group's U.S. growth and buyout private equity unit.
<b>Curt Futch</b>	Board Member	Managing Partner of Jupiter Peak Capital; former Managing Director and Senior Portfolio Manager of Crestline Investors; Former Vice President with BNP Paribas Merchant Banking Group.
<b>Edward Stern</b>	Board Member	President and Chief Executive Officer of Neptune Regional Transmission System, LLC, which developed, constructed and now operates a 660 MW undersea electric transmission system that interconnects Sayreville, New Jersey with Long Island, New York. Mr. Stern was the former Chief Executive Officer of Enel North America, Inc., which owned or operated nearly one hundred power plants in seven countries.
<b>Jeff Grybowski</b>	Chief Executive Officer	Lead developer of the Block Island Wind Farm; former Chief of Staff to the Governor of Rhode Island and an internationally-recognized expert in renewable energy policy and project development.

<b>Chris van Beek</b>	President	30 years in the offshore construction industry. 20 years managing major capital projects. Former COO of Heerema Marine Contractors, the leading offshore construction company. BS Civil Engineering.
<b>David Schwartz</b>	General Counsel	Over 25 years in the energy industry. Senior attorney involved with 1,000's of MW of energy project development, financing and sales. Legal expert in U.S. Offshore Wind matters
<b>David Hang</b>	Chief Financial Officer	Senior Vice President of D. E. Shaw & Co., L.P. and a member of the D. E. Shaw Group's U.S. growth and buyout private equity unit. Raised all required debt and tax equity for the Block Island Wind Farm.
<b>Steve Key</b>	Board Member	Former CFO of Textron Inc.; formerly served on the board of directors of First Wind, Rhode Island School of Design, Greenhill & Co., J.D. Watkins.
<b>Brian Redmond</b>	Board Member	Founder of Paragon Energy Holdings LLC, Formerly President of ALTIVIA Petrochemicals, LLC, President of Houston Pipe Line Company and Louisiana Resource Company, and Executive Director of UBS Warburg Energy.

*Note: Each Board Member has served for the past three years or longer.*

Deepwater Wind's Officers are included in the Board of Managers listed above.

#### 7.2.3 Subsidiaries Supporting Project

Not Applicable.

#### 7.2.4 Equity and Debt Provider – Development

Deepwater Wind is prepared to fund the development cost with revenue from existing projects or equity subscriptions from existing and potentially new investors.

#### 7.2.5 Organization Chart

The Bidder is a wholly-owned direct subsidiary of Deepwater Wind Holdings, LLC, a Delaware limited liability company formed in 2007 ("DWW Holdings"). DWW Holdings, through subsidiaries, is the owner of the Block Island Wind Farm, the South Fork Wind Farm, the Skipjack Wind Farm, the Revolution Wind Project and the BOEM Leases for the Rhode Island – Massachusetts Wind Energy Area. Additionally, Delaware Wind is a 50% owner of Garden State Offshore Energy, which owns the BOEM Lease for the Delaware Wind Energy Area.

As is consistent with industry practice, a wholly-owned indirect subsidiary of DWW Holdings (and a subsidiary of the entity that holds the leases for the RI-MA WEA, as well as an affiliate of the Bidder) will be the Project company (the "ProjectCo") and a party to the permits and PPA. An indicative organizational chart, showing ProjectCo ownership and project-level debt and tax equity is shown depicted below as **Figure 7-1** and attached as **Appendix 7-2**.



#### **7.2.6 Joint Ownership**

This Proposed Projects are not jointly owned.

#### **7.2.7 Pending Acquisition by Ørsted**

On October 8, 2018, Ørsted and the D.E. Shaw group announced an agreement under which Ørsted will acquire a 100% equity interest in Deepwater Wind Holdings, LLC. Ørsted has announced that the two companies' US offshore wind assets and organizations will be merged into a new entity to be named Ørsted US Offshore Wind. Senior management from Deepwater Wind will hold senior roles in the new entity, including Jeffrey Grybowski, who will become the new entity's Co-CEO, and David Hang, who will become the new entity's President. Further, Ørsted has announced that it will honor the commitments associated with Deepwater Wind's projects. At the time of the submission of this Proposal, the acquisition has not yet closed, and the two companies continue to operate independent of, and in competition with, each other.

As the world's leading developer of offshore wind farms, Ørsted has installed 5.1GW offshore wind capacity in Europe and has a further 3.8GW under construction. It is Ørsted's ambition to have installed a total offshore wind capacity of 11-12GW worldwide by 2025. For more information on Ørsted, visit <https://orsted.com>.

### **7.3 Financing Plan**

*For projects that include new facilities or capital investment, provide a description of the financing plan for the project, including construction and term financing. The financing plan should address the following:*

- i. Who will finance the project and the related financing mechanism or mechanisms that will be used (i.e. convertible debenture, equity or other) including repayment schedules and conversion features*
- ii. The project's existing initial financial structure and projected financial structure*
- iii. Expected sources of debt and equity financing*
- iv. Estimated construction costs*
- v. The projected capital structure*
- vi. Describe any agreements, both pre and post commercial operation date, entered into with respect to equity ownership in the proposed project and any other financing arrangement.*

*In addition, the financing plan should address the status of the above activities as well as the financing of development and permitting costs. All bidders are required to provide this information.*

The financing of the BIWF proved that capital is available for well-developed and appropriately-sized U.S. offshore wind projects. The Projects will benefit from the precedents of the Block Island Wind Farm, the South Fork Wind Farm, and the Skipjack Wind Farm. Deepwater Wind expects that financing structure for the Revolution Wind Farm will be similar to that of the BIWF project.

Currently, Deepwater Wind funds development and permitting costs with equity subscriptions from current investors and potential new investors. Deepwater Wind's financial plan is premised on structuring long-term revenue and expense streams contractually, to facilitate a limited recourse project financing that will provide attractive risk-adjusted returns to investors while maintaining conservative debt coverage ratios to assure receipt by debt providers of principle and interest payments. The process to successfully size, structure and place the debt will be premised on the following:

- Ensuring that the equity return profile of the Project is adequate to satisfy the investment criteria of the current equity sponsors and to potentially attract additional equity participants. In part, this will be premised on structuring the Project to ensure that construction and operating risks are managed appropriately.
- Ensuring that the capital structure and the revenue stream provide appropriate minimum debt coverage ratios (DCR) throughout the tenor of the debt.
- Structuring the equipment supply and construction contracts to minimize the risks of cost and schedule overruns. This will be accomplished through a combination of fixed price contracts, EPC participant guarantees, and a fully-integrated risk management/insurance program.
- Structuring the operational phase contracts to ensure the contracts that result in revenue streams are appropriately matched with the operational plan for the Project. Prior to financial closing for the Project, the Project's development costs will be fully funded through equity contributions made by Deepwater Wind (supported by existing investors and, potentially, new investors).

During construction, the Proposed Projects' costs will be funded with a combination of equity and debt. Estimates of total constructs costs are provided in the Lookup Table provided in **Appendix 1-6**. Deepwater Wind anticipates a financial structure for the Proposed Projects similar to that of the BIWF Project. Deepwater Wind assumes the following capital structure:

- [REDACTED]

For both Proposed Projects, Deepwater Wind intends to invest the equity portion of the total project costs through equity subscriptions from the current sponsors and/or other investors. The debt portion of the capital structure will include bank and institutional financing which will be raised from the proceeds of a non-recourse financing. [REDACTED]

[REDACTED] The financing strategy is based on current market conditions. In the event that the market conditions change prior to financing, alternate financing strategies include an institutional private placement or public style financing, or a combination of these strategies. As the development of the Project progresses, Deepwater Wind will develop a base case pro forma for the Project that will set forth Deepwater Wind's assumptions for the sources and uses of funds.

Deepwater Wind expects that equity commitments will be provided by new and/or existing investors, although no agreements have yet been entered into with respect to equity ownership. Deepwater Wind's managers have successfully raised equity from multiple creditworthy counterparties for investment in a variety of projects. Deepwater Wind has engaged in a number of preliminary discussions with financial institutions, although the optimum time for the beginning of the financing process will not be until power from the Project has been contracted and Deepwater Wind has firm construction and equipment supply quotes.

## 7.4 **Financing Experience**

*Provide documentation illustrating the experience of the project sponsor in securing financing for projects of similar size and technology. For each project previously financed provide the following information:*

- i. *Project name and location*
- ii. *Project type and size*
- iii. *Date of construction and permanent financing*
- iv. *Form of debt and equity financing*
- v. *Current status of the project*

Deepwater Wind is the only developer to successfully complete financing for an offshore wind farm in America and the only developer in the world to complete a tax equity transaction for an offshore wind farm, as discussed in **Section 7.3**. In February 2015, Deepwater Wind secured approximately [REDACTED] of senior secured project financing for the BIWF project, funded by a consortium of world-class lenders led by Societe Generale. This financing was awarded Renewable Energy Deal of the Year in 2015 by Project Finance International and IJ Global. The financing of Block Island includes six leading lenders and two world-class tax equity investors – Citi and GE.

## 7.5 Financial Resources

*For projects that include new facilities or capital investment, provide evidence that the bidder has the financial resources and financial strength to complete and operate the project as planned.*

The capital costs for the Proposed Projects, including the equity and debt portions of the capital structure, are provided in the Lookup Table attached as **Appendix 1-6**. As discussed in **Section** Error! Reference source not found., Deepwater Wind currently intends to invest the equity portion of the total project cost through equity subscriptions from the current sponsors and/or other investors. The debt portion of the capital structure will include bank and institutional financing which will be raised from the proceeds of a non-recourse financing. [REDACTED]

As discussed in **Section 7.4**, Deepwater Wind has unparalleled experience financing the development and construction of an offshore wind farm in the U.S., a track record that underscores the entities' financial strength and resources to complete and operate the project as planned.

## 7.6 Financial Statements

*Provide complete copies of the most recent audited financial statement or annual report for each bidder for each of the past three years; including affiliates of the bidder (if audited statements are not available, reviewed or compiled statements are to be provided). Also, provide the credit ratings from Standard & Poor's and Moody's (the senior unsecured long-term debt rating or if not available, the corporate rating) of the bidder and any affiliates and partners.*

Copies of the three most recent years of audited financial statements of Deepwater Wind's parent entity, Deepwater Wind Holdings, LLC, is provided in **Appendix 7-4**. As a private company, Deepwater Wind does not have credit or debt ratings.

### 7.7 **Board of Directors, Officers and Trustees**

*The bidder should demonstrate its ability (and/or the ability of its credit support provider) to provide the required security, including its plan for doing so.*

As discussed in **Section 7.2.2**, Deepwater Wind has assembled an industry-leading Board of Managers consisting of both representatives of the Investors and independent industry experts.

### 7.8 **Credit Support**

*Provide a description of any current or recent credit issues/ credit rating downgrade events regarding the bidder or affiliate entities raised by rating agencies, banks, or accounting firms.*



### 7.9 **Credit Issues**

*Describe the role of the Federal Production Tax Credit or Investment Tax Credit (or other incentives) on the financing of the project.*

There have been no current or recent credit issues/credit rating downgrade events regarding Deepwater Wind or its affiliate entities raised by rating agencies, banks or accounting firms.

### 7.10 **Role of Incentives**

*Bidders must disclose any pending (currently or in the past three years) litigation or disputes related to projects developed, owned or managed by bidder or any of its affiliates in the United States, or related to any energy product sale agreement.*

[REDACTED]

[REDACTED]

[REDACTED]

## 7.11 *Litigation and Disputes*

*Bidders must disclose any pending (currently or in the past three years) litigation or disputes related to projects developed, owned or managed by bidder or any of its affiliates in the United States, or related to any energy product sale agreement.*

There is no litigation, disputes, claims or complaints involving Bidder or an affiliate of Bidder, against National Grid or any affiliate of National Grid.

## 7.12 *Operating Life*

*What is the expected operating life of the proposed project? What is the depreciation period for all substantial physical aspects of the bid, including generation facilities, transmission lead lines to move power to the grid, transmission proposals, and mandatory and voluntary transmission system upgrades?*

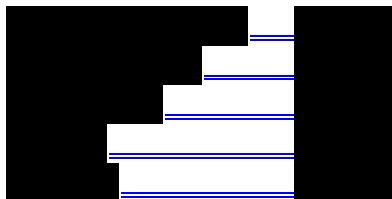
### 7.12.1 **Wind Farm**

Deepwater Wind anticipates a minimum [REDACTED] operating life for the Offshore Wind Projects. The Project will be depreciated in accordance with IRS guidelines.



### 7.12.2 Delivery Facilities

The Delivery Facilities has several components, each with a different operating life.



All equipment is depreciated over [REDACTED] concurrent with the useful life of the offshore wind equipment.

### 7.13 Role of Long-Term Contract

*For projects that include new facilities or capital investment, has the bidder already obtained financing, or a commitment of financing, for the project? If financing has not been obtained, explain how obtaining a long-term agreement as proposed will help you in obtaining financing for the proposed project, in obtaining more favorable terms for the financing of the proposed project, or in supporting the future capital investment.*

See Section 7.1.2.

### 7.14 Prior Sales – Energy / RECs

*State whether the bidder or its affiliates have executed agreements with respect to energy, RECs and/or capacity for the project (including any agreements that have been terminated) and provide information regarding the associated term and quantities, and whether bidder has been alleged to have defaulted under or breached any such agreement.*

The Company has not executed agreements with respect to Energy, RECs, and/or capacity for the Offers contained in this response for the Project.

### 7.15 Affiliated Entities and Joint Ventures

*List all of the bidder's affiliated entities and joint ventures transacting business in the energy sector.*

Following is a list of Deepwater Wind's affiliated entities and joint ventures actively engaged in the generation and transmission of electricity in the US:

- Block Island Wind Farm, LLC
- Deepwater Wind South Fork, LLC
- Skipjack Offshore Energy, LLC
- DWW Rev I, LLC
- DWW Solar II, LLC

Deepwater Wind is principally owned by affiliates of the D.E. Shaw group. DESRI Renewables, LLC is an affiliated entity of the D.E. Shaw group.

### 7.16 **Bankruptcy**

*Has bidder, or any affiliate of bidder, in the last five years, (a) consented to the appointment of, or was taken in possession by, a receiver, trustee, custodian or liquidator of a substantial part of its assets, (b) filed a bankruptcy petition in any bankruptcy court proceeding, (c) answered, consented or sought relief under any bankruptcy or similar law or failed to obtain a dismissal of an involuntary petition, (d) admitted in writing of its inability to pay its debts when due, (e) made a general assignment for the benefit of creditors, (f) was the subject of an involuntary proceeding seeking to adjudicate that Party bankrupt or insolvent, (g) sought reorganization, arrangement, adjustment, or composition of it or its debt under any law relating to bankruptcy, insolvency or reorganization or relief of debtors?*

In the last five years, Deepwater Wind has not (a) consented to the appointment of, or was taken in possession by, a receiver, trustee, custodian or liquidator of a substantial part of its assets, (b) filed a bankruptcy petition in any bankruptcy court proceeding, (c) answered, consented or sought relief under any bankruptcy or similar law or failed to obtain a dismissal of an involuntary petition, (d) admitted in writing of its inability to pay its debts when due, (e) made a general assignment for the benefit of creditors, (f) was the subject of an involuntary proceeding seeking to adjudicate that Party bankrupt or insolvent, (g) sought reorganization, arrangement, adjustment, or composition of it or its debt under any law relating to bankruptcy, insolvency or reorganization or relief of debtors.

### 7.17 **Conflicts of Interest**

*Briefly describe any known conflicts of interest between bidder or an affiliate of bidder and The Narragansett Electric Company, or any affiliates of the foregoing.*

The Bidder and its affiliates do not have any known conflicts of interest with National Grid or its affiliates in the foregoing.

### 7.18 *Litigation/Disputes*

*Describe any litigation, disputes, claims or complaints involving the bidder or an affiliate of bidder, against The Narragansett Electric Company or any affiliate of The Narragansett Electric Company.*

There is no litigation, disputes, claims or complaints involving Bidder or an affiliate of Bidder, against National Grid or any affiliate of National Grid.

### 7.19 *Contractual Disputes*

*Describe any litigation, disputes, claims or complaints, or events of default or other failure to satisfy contract obligations, or failure to deliver products, involving bidder or an affiliate of bidder, and relating to the purchase or sale of energy, capacity or renewable energy certificates or products.*

There is no litigation, disputes, claims or complaints, or events of default or other failure to satisfy contract obligations, or failure to deliver products, involving Bidder or an affiliate of the Bidder, and relating to the purchase or sale of energy, capacity or renewable energy certificates or products.

### 7.20 *Investigations and Convictions*

*Confirm that bidder, and the directors, employees and agents of bidder and any affiliate of bidder are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by state or federal law in any jurisdiction involving conspiracy, collusion or other impropriety with respect to bidding on any contract, or have been the subject of any debarment action (detail any exceptions).*

None of the Bidder, and the directors, employees, and agents of the Bidder and any affiliate of the Bidder are currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by state or federal law in any jurisdiction involving conspiracy, collusion or other impropriety with respect to bidding on any contract, or have been the subject of any debarment action.

### 7.21 *Regulatory and Other Approvals*

*Identify all regulatory and other approvals needed by bidder to execute a binding sale agreement.*

Approval of a binding agreement to sell Energy and RECs will require the approval of the Company's Board of Managers.

## 7.22 ***Affiliations with National Grid***

*Describe and document any and all direct and indirect affiliations and affiliate relationships, financial or otherwise in the past three years between the bidder and The Narragansett Electric Company and its affiliates, including all relationships in which The Narragansett Electric Company has a financial or voting interest (direct or indirect) in the bidder or the bidder's proposed project. These relationships include:*

- Corporate or other joint arrangements, joint ventures, joint operations whether control exists or not;*
- Minority ownership (50% or less investee);*
- Joint development agreements;*
- Operating segments that are consolidated as part of the financial reporting process;*
- Related parties with common ownership;*
- Credit, debenture, and financing arrangements, whether a convertible equity feature is present or not;*
- Wholly owned subsidiaries; and*
- Commercial (including real property) relationships with The Narragansett Electric Company.*

As discussed in **Section 13.5**, in connection with the BIWF project, Deepwater Wind also fully developed the Block Island Transmission System ("BITS", now known as "Sea2Shore") – a 30-mile onshore and offshore transmission system connecting Block Island to the mainland of Rhode Island for the first time. This was the first offshore renewable energy transmission system developed in the United States. Deepwater Wind worked closely with Narragansett to achieve a successful joint engineering-procurement-construction effort to bring the system on-line concurrently with the BIWF project.

Further, in connection with the Block Island Wind Farm, affiliates of the Bidder are counterparties to several agreements with affiliates of National Grid, including a Power Purchase Agreement, and Interconnection Agreement, and a Fiber Use Agreement.

Deepwater Wind and GridAmerica Holdings Inc., an affiliate of National Grid, ("GridAmerica") have entered into an option agreement (the "Option Agreement") pursuant to which GridAmerica has the right to acquire the Revolution Wind Delivery Facility at COD, subject to certain terms and conditions and will provide transmission service to the Revolution Wind Project and recover its purchase price under a "Transmission Services Agreement" or "TSA".

## Section 8 Siting, Interconnection and Deliverability

### 8.1 *Site Plan*

*Provide a site plan including a map of the site that clearly identifies the location of the Eligible Facility site, the assumed right-of-way width, the total acreage for Eligible Facilities, the anticipated interconnection point, and the relationship of the site to other local infrastructure, including transmission facilities, roadways, and water sources. In addition to providing the required map, provide a site layout plan which illustrates the location of all major equipment and facilities on the site.*

Site plan included? Yes ☒ No ☐ If not, please explain:

The location of the Proposed Projects as well as an overview of their associated real property rights, are depicted in the Projects Site Plan in **Appendix 8-1**.

#### 8.1.1 Wind Farm Site Control and Right to Use

On July 31, 2013, Deepwater Wind secured a lease for the exclusive right to develop an offshore wind farm in the RI-MA WEA during the first ever competitive auction held by BOEM for offshore renewable energy on the OCS. The RI-WEA is comprised of two lease areas, BOEM Lease #OCS-A 0486 which consists of 97,498 acres and BOEM Lease #OCS-A 0487 which consists of 67,252 acres. Only, a portion of the lease areas will be used for the Proposed Projects. The BOEM Leases provides for an operations term of 25 years, well beyond the 20-year term of the proposed PPA, and the BOEM Leases allow for renewals. Please see **Appendix 8-2** for a copy of the BOEM Lease #OCS-A 0486 and BOEM Lease # OCS-A 0487.

#### 8.1.2 Delivery Facilities Site Control and Right to Use

The BOEM Leases provide the necessary property and development rights for a substantial portion of the development Proposed Projects for the entire term of the proposed PPA. Given Deepwater Wind's experience acquiring interconnection path rights, the team is confident in its ability to acquire the remainder of the site control.

Deepwater Wind has identified an optimized route that avoids the highest traffic areas and environmentally sensitive areas. The Delivery Facilities will each interconnect with a new substation which will be located adjacent to the existing points of interconnection.

- The offshore segment of the Delivery Facilities will traverse federal waters on the OCS, as well as Rhode Island state waters. Rights to use of the OCS are provided with the BOEM leases. Rights to state waters will be acquired from the RI CRMC in connection with the permitting of the Offshore Wind Projects.

- [REDACTED]

## 8.2 Plan for Acquiring All Real Property Rights

*Identify any real property rights (e.g., fee-owned parcels, rights-of-way, development rights or easements or leases) that provide the right to use the Eligible Facility site, including, for Eligible Facilities, and any rights of way needed for interconnection.*

*i. Does the project have a right to use the Eligible Facility site for the entire proposed term of the PPA or tariff (e.g., by virtue of ownership or land development rights obtained from the owner)?*

Yes ☒ No ☐ If not, please explain:

*If so, please detail the bidder's rights to control the Eligible Facility site control.*

*iii. Describe the status of acquisition of real property rights, any options in place for the exercise of these rights and describe the plan for securing the necessary real property rights, including the proposed timeline. Include these plans and the timeline in the overall project timeline.*

*iv. Identify any joint use of existing or proposed real property rights*

Deepwater Wind has all real property rights necessary to construct and operate the wind farm portions of the Revolution Expansion and Independent Wind, as well as the federal waters portion of the Delivery Facilities over the full term of the proposed PPA, as detailed in **Section 8.1.1**.

Deepwater Wind has the majority of the real property rights necessary to construct and operate the Revolution Expansion and Independent Wind Delivery Facilities, as detailed in **Section 8.1**.

For the Revolution Expansion Project Delivery Facilities, Deepwater Wind will obtain the following:

- A submerged lands lease or license from the RI CRMC for the portion of the submarine cable that is within Rhode Island waters;

• [REDACTED]

For the Independent Wind Delivery Facilities, Deepwater Wind will obtain the following for:

- A submerged lands lease from the RI CRMC for the portion of the submarine cable that is within Rhode Island waters;




Deepwater Wind has entered into a letter of intent agreement with the Quonset Development Corporation (QDC), provided in **Appendix 8-4**, which defines the terms of a lease agreement for the proposed Revolution Expansion Delivery Facilities adjacent to the Davisville substation. Deepwater Wind expects that all the land required for the onshore Delivery Facilities can be under control by the end of the third quarter 2019. The terrestrial cable route for the Independent Wind Project is under negotiations with National Grid Ventures and will use existing public and utility rights-of-way. Independent Wind will connect directly into the existing Kent County Substation. Both projects will also use cable landfall locations on QDC property; negotiations for easements for the cable landfall locations is ongoing and will be concluded in early 2019.

If either of the Proposed Projects is selected and Deepwater Wind enters into a PPA, Deepwater Wind will utilize Rhode Island ports for significant aspects of fabrication, assembly and marshalling. Deepwater Wind already has an executed option at the Port of Providence, provided in **Appendix 8-3**. Deepwater Wind is also in discussions with Quonset Development Corporation about potential uses of that facility during construction. Deepwater Wind could also use additional regional ports to support the construction and operations of the Project.

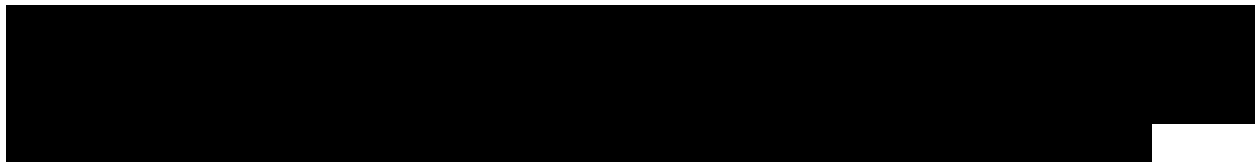
### 8.3 *Site Zoning and Land Use Permitting Plan*

*Provide evidence that the Eligible Facility site is properly zoned or permitted. If the Eligible Facility site is not currently zoned or permitted properly, identify present and required zoning and/or land use designations and permits and provide a permitting plan and timeline to secure the necessary approvals. Detail the zoning and permitting issues:  
Permitting plan and timeline:  
Start Date:            End Date:*

#### 8.3.1 **Site Zoning Overview**

While there are no official zoning designations in the marine environment where the Wind Farm and the majority of the Delivery Facilities will be located, the RI-MA WEA was created as the result of a comprehensive, multi-year marine spatial planning process involving a variety of offshore stakeholders, and BOEM specifically established the RI-MA WEA as an area appropriate for offshore wind development (see  for applicable zoning maps).





#### **8.3.2 Land-Use Permitting Plan**

The Revolution Expansion Project Delivery Facilities area, inclusive of the terrestrial cable and project substation, is appropriately zoned for the proposed uses and will not require rezoning. The Independent Wind Delivery Facilities area inclusive of the terrestrial cable and equipment at the point of interconnection will be within existing utility rights-of-way, and connect within the yard of the existing Kent County Substation, and will not require rezoning. Additional information on overall land use permitting is described in Section 9.

### **8.4 Surrounding Areas**

*Provide a description of the area surrounding the Eligible Facility site, including a description of the local zoning, flood plain information, existing land use and setting (woodlands, grasslands, agriculture, other).*

#### **8.4.1 Wind Farms**

The Proposed Projects are sited far from shore in order to minimize impacts on coastal communities. The Wind Farms will be located offshore in federal waters in the RI-MA WEA, which is greater than 10 miles from inhabited land as displayed in **Appendix 8-1**. Location of turbines within the BOEM Lease Areas will be determined based on final geotechnical and environmental surveys as well as consultations with stakeholders and governmental agencies. Because of these distances, visibility of the Project will be limited from shore. No known conflicting structures or facilities exist in or near the area where turbines are proposed.



The boundaries of the RI-MA WEA were developed through a multi-year stakeholder process that included the participation of state and federal agencies as well as a broad group of stakeholders such as commercial fishermen, tribes and environmental advocacy organizations. The RI-MA WEA was expressly designed to avoid proximity to coastal areas of MA and RI. Additionally, RI-MA WEA was designed to avoid shipping lanes and high-value fishing grounds. This area was first identified in 2010 by a Memorandum of Understanding (MOU) between Governors of RI and MA to resolve conflicts between the states and provide input to BOEM regarding identification of lease areas.

Following this MOU, the Ocean Special Area Management Plan (OSAMP) was completed. The OSAMP was a two-year planning process conducted by the RI CRMC to, in part, identify suitable areas for offshore wind energy. The OSAMP provides valuable insights for shared ocean resources, including fisheries, transportation, and siting of offshore renewable energy. In addition to the planning efforts and science completed during the OSAMP, there have been multiple years of scientific assessment within the RI-MA WEA by BOEM, the State of MA, and Deepwater Wind. This site-specific information provides an invaluable resource that Deepwater Wind will use during the siting and permitting of the Projects to minimize impacts to sensitive habitats and potential conflicts with stakeholders. Studies completed include fisheries (trawl and lobster), marine mammal and sea turtle, avian and benthic assessments.

Deepwater Wind also benefits from the science completed at the BIWF and ongoing science for the SFWF. At the BIWF, Deepwater Wind studied the effects of the construction and operation on fish, lobsters, avian species and bats. These studies documented the quick recovery of the seafloor after the disturbance associated with installation and documented the swift growth of sea grasses and other species on the legs of the jacket foundation that have resulted in an enhanced environment where marine species are flourishing. BOEM also completed an independent assessment of impacts during construction and operations of the BIWF and found that offshore wind can co-exist in harmony with marine species and other marine stakeholders who are active in the area.

#### **8.4.2 Delivery Facilities**

A segment of both the Revolution Expansion Delivery Facilities and the Independent Delivery Facilities are located in federal waters on the OCS, as well as Rhode Island state waters. The Delivery Facilities Routes originate in the RI-MA WEA and then enter Narragansett Bay. See **Appendix 9-2** for a summary of the area surrounding the Revolution Delivery Facilities and the Independent Delivery Facilities. The majority of the Delivery Facilities for both Proposed Projects are also located offshore.

##### ***8.4.2.1 Revolution Expansion Delivery Facilities***

The Revolution Expansion Delivery Facilities consists of two primary components; the terrestrial cable and the onshore project substation. After landfall in the Quonset Industrial Park in North Kingstown, RI, the Revolution Expansion terrestrial cable route will traverse existing industrial parcels and existing public rights-of-way or State-owned properties, to an interconnection point at a new substation. The onshore project substation would be adjacent to the existing Davisville Substation.

The proposed Revolution Expansion onshore project substation is located in the northwest portion of an area zoned Quonset Business Park (QBPD). The northeast portion of the proposed Delivery Facilities is developed with the existing Davisville substation. The remainder of the Site consists of forest and freshwater wetland with the exception of the paved access drive, which runs down the eastern portion of the lot and connects to Camp Avenue, a public right-of-way to the south. The Site is bounded by a commercial business on the south, commercial development associated with the Quonset Business Park on the east, and undeveloped woodland on the north and west. The northern portion of the site contains the existing National Grid transmission line right-of-way (ROW), which includes the tap lines in and out of the existing substation.

**Wetlands**

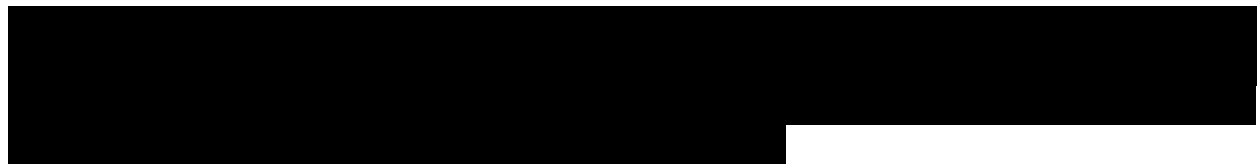
The Revolution Expansion project substation property is bordered by wetland resource areas on the north, northeast, and west. The wetlands consist of palustrine forested Swamp. Given that the size of the Swamp is greater than three acres, it is assigned a 50-foot Perimeter Wetland buffer in accordance with the Rhode Island Department of Environmental Management (RIDEM) Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act (RIDEM 2017).

**Floodplains**

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Mapping and Flood Study for the Town of North Kingstown (Community Panel Number 44009C0108J, effective October 16, 2013) indicates the existing substation site is within a Zone X, identified as a 0.2% Annual Chance Flood Hazard. Northern portions of the lot are within Zone AE (El. 13). The Revolution Expansion project substation property is identified as a Zone X, Area of Minimal Flood Hazard.

**8.4.2.2 Independent Wind Delivery Facilities**

Similar to the Revolution Wind Expansion Delivery Facilities, the Independent Wind Project's cable will make landfall in the Quonset Industrial Park in North Kingstown, RI. The Independent Wind Delivery Facilities route will traverse existing industrial parcels and existing public rights-of-way or State-owned properties. The Independent Wind generation tie-in line will then follow existing National Grid utility rights-of-way adjacent to the existing National Grid 115 kV system to interconnect at the Kent County Substation in Warwick, Rhode Island. The proposed land use is consistent with current land uses along the existing National Grid transmission right-of-way and at the existing Kent County Substation.





## 8.5 **Interconnection Route**

*For Eligible Facilities, describe and provide a map of the proposed interconnection that includes the path from the generation site to the ISO New England Inc. ("ISO-NE") Pool Transmission Facilities ("PTF"). Describe how the bidder plans to gain interconnection path site control.*

*Interconnection map included? Yes: ☒ No: ☐ if not, please explain:*

*Interconnection site control plan:*

The proposed interconnection routes and illustrative maps for the Projects are described in **Section 8.1**. While not all required site control for the Interconnection Route have been obtained, a plan for acquiring all Real Property rights provided in **Section 8.2**, including those needed to support the Interconnection Route.

## 8.6 **Interconnection and Delivery Strategy**

*Please describe the status of any planned interconnection to the grid. Has the bidder made a valid interconnection request to ISO-NE, the applicable New England Transmission Owner, or any neighboring control areas, to interconnect at the Capacity Capability Interconnection Standard? Have any studies been*

*completed by ISO-NE or the applicable Transmission or Distribution Owner? If multiple interconnection requests have been made, please specify all such active requests which have not been superseded by subsequent requests and information regarding the status of each. Provide copies of any requests made and studies completed. Describe how such studies and information support the costs assumed in preparing your bid and the associated timeline proposed.*

For Revolution Wind and Independent Wind, Deepwater Wind is planning Delivery Facilities with approximately 700 MW and 352 MW of capacity, respectively, as described in **Section 3.4**. The design features of the Delivery Facilities that accommodate this are:

Revolution Wind:

- An offshore substation that can accommodate approximately 700 MW of capacity;
- A permitted offshore corridor that will accommodate the installation of at least two submarine transmission lines; and
- Cable landfall(s) at or near the onshore substation(s) and interconnection facilities that can accommodate the interconnection and delivery of approximately 700 MW of offshore wind.

The Revolution Wind Project will require two 230 kV submarine cables, collectively capable of delivering up to 700 MW. The Revolution Expansion offer in this Proposal makes use of the remaining 100 MW of capacity on the first two cables. Deepwater Wind has submitted a new ISO-NE interconnection request for a capacity of 704 MW (Q#781) to accommodate the collective output of the RI 400 MW Contract and the Revolution Expansion, all to be delivered using the Revolution Delivery Facilities.

Independent Wind:

- An offshore substation that can accommodate approximately 352 MW of capacity;
- A permitted offshore corridor that will accommodate the installation of at least one submarine transmission line; and
- Cable landfall(s) at or near the onshore substation and interconnection facilities that can accommodate the interconnection and delivery of approximately 352 MW of offshore wind.

The Independent Wind offer in this Proposal anticipates a 230-kV submarine cable capable of delivering up to 352 MW. This cable will be in addition to the two cables planned for the 600 MW of contracted capacity for Revolution Wind. Deepwater Wind has submitted a new ISO-NE interconnection requests for a capacity of 352 MW (Q#782) for Independent Wind, all to be delivered using the Independent Wind Delivery Facilities.

All interconnection requests have entered the queue under the Capacity Capability Interconnection Standard, a necessary requirement for Forward Capacity Market eligibility and are being studied to ensure full deliverability. Copies of the interconnection requests are provided as **Appendix 8-6**. Kick-off meetings for the Q#781 and Q#782 interconnection studies are scheduled to take place with ISO-NE on October 30, 2018.

Deepwater Wind commits to comply with all applicable ISO-NE and state interconnection requirements for generation facilities.

Deepwater Wind understands that the EDCs will not provide preferential treatment of special assistance for projects selected through this RFP process in meeting interconnection requirements. Deepwater Wind will be responsible for all interconnection costs.

Deepwater Wind commits to pay for all interconnection and transmission upgrade costs required to ensure full dispatch, including transmission upgrades that may need to occur beyond the point of interconnection.

## 8.7 **Impact on Reliability**

*Describe the Project's electrical system performance and its impact to the reliability of the New England Transmission system. Provide the status of any interconnection studies already underway with ISO-NE and/or the transmission owner. Provide a copy of any studies completed to date. Provide a copy of an interconnection agreement, if any, executed by the bidder with respect to the proposed project. If an interconnection agreement has not been executed, please provide the steps that need to be completed before an interconnection agreement can be executed and the associated timeline.*

*Performance and its impact:*

*Attachments:*

*Copy of completed studies attached: ☐ If none, please explain:*

*Copy of Interconnection Agreement attached: ☐ If none, please explain:*

Deepwater Wind plans to interconnect both of the Proposed Projects in RI/MA WEA. ISO-NE completed studies are not yet available. However, Deepwater Wind initially commissioned Siemens PTI and SNC Lavalin to prepare a pre-feasibility injection studies and overlapping impact studies, provided in **Appendix 5-1**. These studies consist of Initial Interconnection Analyses to assess the ability of the Project to interconnect subject to the Capacity Capability Interconnection Standard (CCIS). These studies assessed the steady state thermal, short circuit impact and an Overlapping Impacts Analysis where the Project's thermal impact was assessed for overlapping conditions accounting for existing system layout. Necessary system upgrades were identified to ensure no deliverability or curtailment issues associated with full dispatch of the Project for either Option. The Project's full output could be delivered at the proposed points of interconnection at either the Davisville Substation or Kent County Substation.

In order to execute an interconnection agreement, the ISO-NE large generator interconnect process will be followed. This includes completion of a Feasibility Study (anticipated completion by June 2019), System Impact Study (May 2020) and a Facility Study (April 2021). Upon completion of the Facility Study, Deepwater Wind will negotiate an interconnection agreement with ISO-NE and the Interconnecting Transmission Owner. We anticipate execution of the interconnection agreement by April 2022.

## 8.8 ***ISO-NE Interconnection Process Planning***

*Projects that do not have I.3.9 approval from ISO-NE must include technical reports or system impact studies that approximate the ISO-NE interconnection process, including but not limited to clear documentation of study technical and cost assumptions, reasoning, and justification of such assumptions. All studies must assume the project will interconnect using the Capacity Capability Interconnection Standard, must use the current ISO-NE interconnection process (including network impact scenarios from multiple projects interconnecting), and must also detail any assumptions with respect to projects ahead of the proposed project in the ISO-NE interconnection queue and any assumptions as to changes to the transmission system that differ from the current ISO-NE Regional System Plan. Please include a scenario analysis that shows how changes in the project interconnection queue could impact interconnection costs.*

Studies were performed to evaluate anticipated results of the ISO-NE interconnection process. These studies can be found in **Appendix 5-1**. Our project interconnection locations at Davisville and Kent County along the 115-kV transmission corridor are not anticipated to be impacted significantly by changes in the project interconnection queue. The existing queue was evaluated, including all competing offshore projects, when performing the Overlapping Impact Analysis which follows the ISO-NE CCIS process. This analysis shows marginal sensitivity to those other projects and we have identified system upgrades necessary for our project(s) to qualify for capacity rights.

## 8.9 ***Alternative Interconnection Scenario***

*To the extent that you provide an alternative interconnection scenario based on ISO-proposed interconnection process changes, you must also include studies using the proposed ISO-NE-proposed process. Any such studies must be accompanied with clear documentation of study technical and cost assumptions, reasoning, and justification of such assumptions.*

Not Applicable.

## 8.10 ***Electrical Models***

*Provide the electrical models of all energy resources supporting the proposed project in accordance with the filing requirements of the ISO-NE Tariff Schedule 22 and 23.*

See the PSS/E user models for the Siemens 8.0 MWs wind turbine generators attached as **Appendices 8-8 and 8-9**.

### 8.11 *Electrical One-Line Diagram*

*Provide a copy of an electrical one-line diagram showing the interconnection facilities and the relevant facilities of the transmission and/or distribution provider.*

Electrical one-line diagram attached: ☒ If none, please explain:

Deepwater Wind prepared one-line diagrams for the Proposed Projects, attached as **Appendix 8-7**.

### 8.12 *Incremental Data Requirements*

*Incremental data requirements for Projects that include Transmission facilities;*

1. IDV file(s) in PSSE v32 format modeling only the new/modified Transmission components of the project:

☒ If none, please explain:

Please see **Appendix 5-1**, which contains an IDV file in PSSE v32 format.

### 8.13 *Energy Constraints for Curtailment*

*Please detail with supporting information and studies (as available) that the energy contemplated in your proposal is able to be delivered to The Narragansett Electric Company without material constraint or curtailment.*

As shown in the Injection Analysis Memo in **Appendix 5-1**, the energy contemplated in the Proposed Projects can be delivered to The Narragansett Electrical Company without material constraint or curtailment.

### 8.14 *Accommodation of Full Energy Generation Profile*

*Please provide sufficient information and documentation to demonstrate that the proposed point of delivery into ISO-NE, along with their proposed interconnection and transmission upgrades including any transmission upgrades beyond the point of interconnection, is sufficient to ensure full dispatch of the proposal's Energy Generation profile.*

As shown in the Injection Analysis Memo in **Appendix 5-1**, the proposed point of deliver in the ISO-NE for the Proposed Projects, as the proposed interconnection and transmission upgrades, is sufficient to ensure full dispatch of the proposal's Energy Generation profile



## **Section 9 Environmental Assessment, Permit Acquisition Plan, Emissions & Eligible Renewable Energy Resource Qualification**

Through the development of the Block Island Wind Farm, Deepwater Wind has gained an unmatched level of understanding of the environmental conditions in and permitting requirements for, the waters of southern New England. Building upon over seven years of intensive environmental study in the waters of southern New England, as well as on-going engagement with the federal resource agencies, Deepwater Wind has developed a comprehensive permit acquisition plan.

In addition to our experience with the BIWF, the Proposed Projects will benefit from Deepwater Wind's current permitting activities for the SFWF, which is proposed in the RI-MA WEA. Deepwater Wind is currently engaged in comprehensive environmental and technical surveys, as well as extensive governmental and stakeholder consultations, in connection with SFWF. Expanding these efforts to include the Proposed Projects will be an efficient and straightforward process.

As part of the development of the BIWF and SFWF projects, Deepwater Wind conducted permit coordination with BOEM, USACE, NOAA NMFS, the USFWS, and the RI CRMC. In addition to the regulatory authorities, Deepwater Wind engaged key stakeholders early in the process and established constructive relationships with the Wampanoag Tribe of Gay Head (Aquinnah), the Narragansett Indian Tribe of Rhode Island, the commercial and recreational fishing community, and both regional and national environmental non-governmental agencies who advocate for the protection of marine mammals and ocean conservation.

Deepwater Wind has recent, relevant experience working with all these regulatory agencies the while addressing for the Proposed Projects during the ongoing permitting of the SFWF and historically during the permitting of the BIWF. Deepwater Wind expects that the experience gained, and relationships established, during the both the SFWF and the BIWF will expedite the permitting process for the Proposed Projects.

### **9.1 Plan to Acquire all Permits**

*Provide a list of all the permits, licenses, and environmental assessments and/or environmental impact statements required. If a bidder has secured any permit or has applied for a permit, please identify in the response.*

*i. Provide a list of all federal, state and local permits, licenses, and environmental assessments and/or environmental impact statements required to construct and operate the project.*

*ii. Identify the governmental agencies that will issue or approve the required permits, licenses, and environmental assessments and/or environmental impact statements.*

Deepwater Wind has a proven record of responsibly engaging and working with the appropriate authorities to receive required permits.

The permits, licenses, and environmental assessments and/or environmental impact statements required to construct and operate the Proposed Projects, described in [REDACTED] are substantially similar to those received for the construction and operations of Deepwater Wind's BIWF and BITS projects and in-process for Deepwater Wind's SFWF project.

Based on Deepwater Wind's experiences with BIWF and SFWF, and its constructive working relationship with the federal resource agencies, Bidder does not anticipate any major permitting issues at this time.

## 9.2 Permitting Timeline










*Provide the anticipated timeline for seeking and receiving the required permits, licenses, and environmental assessments and/or environmental impact statements. Include a project approval assessment which describes, in narrative form, each segment of the process, the required permit or approval, the status of the request or application and the basis for projection of success by the milestone date. All requirements should be included on the project schedule in Section 12.*

Bidder is on schedule to secure all necessary permits in time to support the proposed 2023 and 2024 COD for these Projects. Table 9-1 below provides a summary of the current permitting timeline for the Project.

**Appendix 9-2** provides a detailed assessment of the process and the anticipated timeline for the permitting requirements. The permitting requirements are also included on the Project Schedule in Section 12.

**Table 9-1: Project's Expected Permitting Timeline**

Activity	RI 400 MW Contract	Revolution Expansion	Independent Wind
Deepwater Acquires Lease through BOEM's multi-factor auction	[REDACTED]	[REDACTED]	[REDACTED]
Deepwater Wind files Site Assessment Plan (SAP)	[REDACTED]	[REDACTED]	[REDACTED]
Deepwater Wind completes site specific environmental and engineering surveys	[REDACTED]	[REDACTED]	[REDACTED]
Deepwater Wind files Construction and Operation Plan (COP), Environmental Report	[REDACTED]	[REDACTED]	[REDACTED]

BOEM Approves COP, Issues Record of Decision, all other federal, state, and local approvals issued			
Offshore construction commences			
Commercial Operations commence			

### 9.3 **Preliminary Environmental Assessment**

*Provide a preliminary environmental assessment of the site and project, including both construction and operation, as applicable. In addition, the bidder should identify environmental impacts associated with the proposed project, any potential impediments to development, and its plan to mitigate such impacts or impediments. The analysis should address each of the major environmental areas presented below, as applicable to the proposed project:*

- i. Impacts during site development*
- ii. Transportation infrastructure*
- iii. Air quality impacts*
- iv. Access to water resources/water quality impacts*
- v. Ecological and natural resources impacts*
- vi. Land use impacts*
- vii. Cultural resources*
- viii. Previous site use (e.g., greenfield, brownfield, industrial, etc.)*
- ix. Noise level impacts*
- x. Aesthetic/visual impacts*
- xi. Transmission infrastructure impacts*
- xii. Fuel supply access, where applicable*

The Critical Issues Analysis (the “CIA”) attached as **Appendix 9-2** contains the Preliminary Environmental Assessment for the Proposed Projects and describes, to the extent applicable, each of the major environmental area requested.

### 9.4 **Public Support**

*Provide documentation identifying the level of public support for the project including letters from public officials, newspaper articles, etc. Include information on specific localized support and/or opposition to the project of which the bidder is aware. Provide copies of any agreements with communities and other constituencies impacted by the project, and a plan for community outreach activities, and discuss the status of that plan.*

Deepwater Wind recognizes the importance of community engagement. It is committed to continued engagement during development, construction, and operations for all of its projects. Deepwater Wind works with local government, community groups, non-governmental organizations, and other stakeholders to ensure its projects are built and operated to maximize benefits and minimize negative impacts. Media highlights that capture the results of its outreach efforts are provided in **Appendix 9-3**.

#### **9.4.1 Local Experience Generating Public Support**

Deepwater Wind is Rhode Island's trusted partner for offshore wind development. The development of the Block Island Wind Farm was a successful public-private partnership between Deepwater Wind and the State of Rhode Island. That project required permits or consultation with over 20 federal, state, and local authorities. Deepwater Wind engaged key stakeholders early in the process and established constructive relationships with the Wampanoag Tribe of Gay Head (Aquinnah), the Narragansett Indian Tribe of Rhode Island, the commercial and recreational fishing community, and both regional and national environmental non-governmental advocates for marine mammal protection and ocean conservation. Public letters of support for its work are provided in **Appendix 9-4**.

#### **9.4.2 Approach to Stakeholder Engagement**

Deepwater Wind is local. We are based in Providence, Rhode Island, and we are here to stay.

As part of the development of the BIWF project, Deepwater Wind conducted extensive pre-survey coordination with BOEM, USACE, NOAA NMFS, the USFWS, and the RI CRMC. In addition to the regulatory authorities, Deepwater Wind engaged key stakeholders early on in the process and established constructive relationships with the Wampanoag Tribe of Gay Head (Aquinnah), the Narragansett Indian Tribe of Rhode Island, the commercial and recreational fishing community, and both regional and national environmental non-governmental agencies that advocate for marine mammal and ocean conservation.

We are developing offshore wind farms in our backyard, and we care about how we go about our business. We hire local fishing industry veterans and professionals to build the best possible development and communication methods.

#### **9.4.3 Fishing Interests**

There have always been conflicts around ocean use and there always will be. But for Deepwater Wind, what matters most is the degree of conflict and how we can reduce those conflicts. Deepwater Wind holds three lease areas, two side-by-side in the Northeast and one in the mid-Atlantic. We acquired these specific areas because they are the least conflicted of any wind energy areas in the U.S. We don't want to build in areas that are deeply conflicted.

For example, when in December of 2016 more than a dozen companies were competitively bidding for the New York "Bight" lease area, Deepwater Wind was not among them. After considering many factors, we concluded that the Bight was too heavily fished and too important to the Mid-Atlantic scallop and

squid industries to build there. Not all ocean areas are alike, just like not all offshore wind companies are alike. In the years to come, we will see more entities petition BOEM to open up new areas for offshore wind construction.

We pledge to continue to try to steer away from overly conflicted proposed wind energy areas. We learn about these conflicts by drawing on our resident team's knowledge and from stakeholders like the local fishing community.

#### **9.4.4 Visual Impact Concerns**

The Proposed Projects are expected to have limited visibility from onshore viewpoints due to distance from shore, curvature of the earth, wave height, and atmospheric conditions. Turbines will be located approximately 15 miles from the closest point on the Massachusetts mainland and on Block Island, and 12 miles from Martha's Vineyard. Deepwater Wind will conduct a visual impact assessment and conduct community outreach to potentially affected stakeholders based on that assessment.

#### **9.4.5 Local Opposition**

At the time of this submission, Deepwater Wind is not aware of any organized opposition to either of the Proposed Projects. As detailed throughout this **Section 9.4**, Deepwater Wind is committed to working closely with communities that may be affected by our projects to avoid, minimize and mitigate any potential local opposition.

#### **9.4.6 Community Engagement**

Deepwater Wind's outreach efforts for our previous projects have resulted in many well-established relationships with state and federal regulatory agencies, representatives from the commercial and sport fishing communities, leading environmental non-governmental organizations (NGOs), and labor. It was support from many of these groups working in collaboration with Deepwater Wind that ultimately made the BIWF successful.

If either or both of the Proposed Projects are selected, Deepwater Wind will continue to draw upon its existing relationships and unique knowledge of the industry to deliver additional offshore wind energy to National Grid with strong public support.

An overview of the communications approach for the Proposed Projects is described in the Outreach Plan, provided in **Appendix 9-5**.

### **9.5 Renewable Energy Resource Qualification**

*Provide documentation demonstrating that the project will be qualified as an eligible renewable energy resource conforming to R.I.G.L. § 39-26-5.*

As offshore wind energy generating facilities, each of the Proposed Projects shall be an Eligible Renewable Energy Resource, qualified by the applicable regulatory authority for the state of Rhode Island as eligible to participate in the Renewable Energy Standard program, under R.I.G.L. § 39-26-1 et seq.

## 9.6 ***REC and Environmental Attributes Tracking***

*All bidders must include sufficient information and documentation that demonstrates that the bidder will utilize an appropriate tracking system to ensure a unit-specific accounting of the delivery of unit-specific and unit contingent of energy and RECs. The RECs and environmental attributes associated with energy generation must be delivered into The Narragansett Electric Company's NEPOOL GIS accounts.*

Deepwater Wind will utilize the New England Power Pool Generation Information System ("NEPOOL GIS") for tracking generation attributes in accordance with applicable rules and requirements<sup>6</sup>. The Project is located inside New England. Delivering the attributes to the NEPOOL GIS is a well-established procedure. Deepwater Wind will deliver all environmental attributes per the terms of the PPA.

## 9.7 ***Litigation and Pending Claims Affecting Permitting***

*Identify any existing, preliminary or pending claims or litigation, or matters before any federal agency or any state legislature or regulatory agency that might affect the feasibility of the project or the ability to obtain or retain the required permits for the project.*

None.

## 9.8 ***Projected Emissions Estimates***

*Provide emissions estimates based on available data from the unit manufacturer.*

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<sup>6</sup> [http://www.nepoolgis.com/wp-content/uploads/sites/3/2017/06/GIS-Operating-Rules-Effective-6\\_12\\_17.doc?x41232](http://www.nepoolgis.com/wp-content/uploads/sites/3/2017/06/GIS-Operating-Rules-Effective-6_12_17.doc?x41232)

**Table 9-1: Project Anticipated Emissions, expressed in pounds/megawatt-hour (lbs./MWh)**

Source of Information	Date of Test (if applicable)	Greenhouse Gases (all except methane) Expressed as Carbon Dioxide equivalent (CO <sub>2</sub> e)	Nitrogen Oxides (NO <sub>x</sub> )	Sulfur Oxides (SO <sub>x</sub> )	Carbon Monoxide (CO)	Particulate Matter (PM 2.5)	Methane (CH <sub>4</sub> )
N/A	N/A	0	0	0	0	0	0

In addition, Deepwater Wind commissioned Navigant Consulting, Inc. to study overall emissions impacts resulting from the Projects offered in this Proposal. The Revolution Expansion Project would result in emissions reduction benefits in the range of \$60 million to \$232 million over the life of the Project and would reduce GHG emissions at a rate of 185,000 tons per year. The Independent Wind Project would result in \$215 million to \$810 million in benefits over the life of the Project and would reduce GHG emissions at a rate of 646,000 tons per year. **Tables 9-1 and 9-2** below show the total emissions reduced for each Project in this Proposal.

**Table 9-2. Revolution Expansion Project: Emissions Reductions in New England (2024-2048)**

Period	CO <sub>2</sub>	NO <sub>x</sub>	SO <sub>2</sub> <sup>7</sup>	PM <sub>10</sub> <sup>8</sup>	Total
Annual Tons (1,000)	185	0.059	0.0001	0.009	n/a
Total Tons, 2024-2048 (1,000)	4,619	1.481	0.002	0.231	n/a
Annual Benefit (mil 2018\$) – Low Case	\$2.399	\$0.115	\$0.001	\$0.106	\$2.620
Annual Benefit (mil 2018\$) – High Case	\$9.280	\$0.728	\$0.001	\$0.911	\$10.921
Total Benefit (mil 2018\$) – Low Case	\$59.97	\$2.87	\$0.01	\$2.65	\$65.504
Total Benefit (mil 2018\$) – High Case	\$232.00	\$18.21	\$0.03	\$22.78	\$273.02

<sup>7</sup> Gas-fired plants in Navigant's models are assumed to have zero kg/MWh. Actual emissions are at around 0.0001 to 0.0002 kg/MWh.

<sup>8</sup> Particulate matter are commonly classified as PM<sub>10</sub> which are matter that are 10 micrometers or less in diameter, and PM<sub>2.5</sub> which are matter 2.5 micrometers or less in diameter. EPA survey data indicates that approximately 1,540 tons of PM<sub>10</sub> were emitted by generators in New England in 2014 and that 87% of the PM<sub>10</sub> were contained in the subclass of PM<sub>2.5</sub>.

**Table 9-3. Independent Wind Project: Emissions Reductions in New England (2025-2049)**

Period	CO <sub>2</sub>	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>	Total
Annual Tons (1,000)	646	0.208	0.0002	0.032	n/a
Total Tons, 2025-2049 (1,000)	16,145	5.189	0.004	0.812	n/a
Annual Benefit (mil 2018\$) – Low Case	\$8.62	\$0.40	\$0.00	\$0.37	\$9.40
Annual Benefit (mil 2018\$) – High Case	\$32.43	\$2.55	\$0.00	\$3.21	\$38.20
Total Benefit (mil 2018\$) – Low Case	\$215.60	\$10.04	\$0.03	\$9.33	\$235.01
Total Benefit (mil 2018\$) – High Case	\$810.86	\$63.79	\$0.07	\$80.20	\$954.92

## 9.9 *Investments to Improve Emissions Profile*

*Describe any investments that will be included with your facility to improve its emissions profile.*

None. Electric generation produced by wind is emissions free.



## Section 10 Engineering and Technology; Commercial Access to Equipment

*This section includes questions pertinent to the engineering design and project technology. This section must be completed for a project that includes new facilities or capital investments for both generation and transmission components if applicable. Bidders should provide information about the specific technology or equipment including the track record of the technology and equipment and other information as necessary to demonstrate that the technology is viable.*

### 10.1 **Preliminary Engineering Plan**

*Provide a reasonable but preliminary engineering plan which includes the following information:*

- i. Type of generation and transmission technology, if applicable
- ii. Major equipment to be used
- iii. Manufacturer of the equipment
- iv. Status of acquisition of the equipment
- v. Whether the bidder has a contract for the equipment. If not, describe the bidder's plan for securing equipment and the status of any pertinent commercial arrangements
- vi. Equipment vendors selected/considered
- vii. History of equipment operations
- viii. If the equipment manufacturer has not yet been selected, identify in the equipment procurement strategy the factors under consideration for selecting the preferred equipment

Deepwater Wind will manage the engineering, procurement, and construction of the Project with package managers responsible for discrete scopes of work associated with technical components of the Project. Table 10-1 below describes the major technical components of the Project and the work packages.

**Table 10-1: Technology at a Glance<sup>9</sup>**

	WIND TURBINE GENERATORS	OFFSHORE FOUNDATIONS	COLLECTION FACILITIES	DELIVERY FACILITIES
<b>Technology Type</b>	Wind turbine generators, specifically, designed for the Offshore environment.	Purpose-built Offshore foundations, suitable for the Project Site.	Medium-voltage electrical collection system connecting the generators to a common generation substation.	High-voltage electrical transmission system connecting the Wind Farm to the Point of Delivery onshore.

<sup>9</sup> The equipment and vendors described here have been selected as the design basis for the Project. Deepwater is currently engaged in discussions with other suppliers of comparable equipment. Deepwater may elect to modify the Project's design to incorporate such equipment, however such modification will not change Deepwater's offering herein.

<b>Major Equipment Used for Project Design Basis</b>	8 MW class turbine with a rotor diameter of 167m or more, installed at a hub height of approx. 115m.	Steel Jacket Foundations, monopiles, or gravity-based foundations suitable for installation in water depths of 100' to 120'	34.5 or 66 kV submarine collection cables, a Siemens Offshore Transmission Module ("OTM"), and associated infrastructure to deliver energy from the WTGs to the offshore platform of the Delivery System.	Offshore switching station, 230 kV AC submarine cable, 230 kV AC buried terrestrial cable and a 230 to 115 or 345 kV onshore substation connecting to a bus expansion at the existing substation.
<b>Manufacturer(s) used for Project Design Basis</b>	Siemens, or equivalent	Gulf Island, EEW, or equivalent	Siemens, LS Cable, or equivalent	Siemens, LS Cable, or equivalent

The Wind Turbine Generators, the Offshore Foundations, and the Collection Facilities are considered part of the "Wind Farm," while the Offshore Switching Station, transmission cable, onshore substation and the 230-kV interconnection/developer attachment facilities are part of the "Delivery Facilities."

Deepwater Wind's Project Execution Plan is detailed below:

#### 10.1.1 Wind Turbine Generators

Deepwater Wind has designed the Wind Farm using the Siemens 8.0 - 167<sup>10</sup> offshore wind turbine, summarized in Table 10-2 below as the Project's design basis.

**Table 10-2: Wind Turbine Generator Engineering Plan**

WIND TURBINE GENERATORS	
<b>i. Type of Technology:</b>	Wind turbine generators specifically designed for the offshore environment.
<b>ii. Major Equipment:</b>	8 MW turbine or larger with a rotor diameter of 167m or more, installed at a hub height of approximately 115 meters or more.
<b>iii. Manufacturer and location of Manufacturing:</b>	Our design basis is the Siemens SWT 8.0-167. Siemens currently manufactures these machines in Europe, specifically Germany and Denmark. We will use reasonable efforts to encourage our turbine supplier to locate work in Rhode Island.

<sup>10</sup> While the Siemens 8.0 - 167 is the design basis for the Wind Farm, the Company is also engaged in discussions with other suppliers of offshore WTGs, including G.E. and MHI-Vestas. Deepwater Wind successfully deployed turbines supplied by GE in the Block Island Wind Farm, described in Section 12.3. Deepwater Wind may elect to modify the Revolution Wind Project's design to incorporate a different WTG.

<b>iv. Status of Acquisition:</b>	Deepwater Wind is currently in direct negotiations with several leading offshore wind turbine suppliers, including Siemens, regarding supply for several projects. If this proposal is selected, we anticipate entering into a turbine supply agreement by the end of 2019.
<b>v. Contract Status:</b>	Deepwater Wind has not yet entered into supply agreements for any of the components of the Revolution Wind Farm.
<b>vi. Vendors Considered:</b>	Deepwater Wind is considering multiple turbine vendors including General Electric and MHI Vestas. While the Siemens 8.0-167 is our Design Basis for this Proposal, Deepwater Wind may elect to modify the Project's design to incorporate such equipment, however, such modification will not change Deepwater's offering herein.
<b>vii. History of Operations:</b>	Large scale turbines like the Siemens 8.0 – 167 represent the latest in offshore wind turbine technology and the culmination of two decades of development from leading global technology firms. WTGs like the Siemens 8.0 MW have been successfully deployed in many European project. Today, over 3,000 offshore WTGs are currently in operation in European waters. Siemens is a market leader in offshore wind turbine technology. The SWT 8.0 is an advanced offshore wind turbine based on Siemens' proven 6 MW platform.
<b>viii. Procurement Strategy:</b>	Upon the receipt of a fully-approved, un-appealable PPA under this Renewable Energy RFP, Deepwater Wind anticipates executing a TSA by the end of 2019.

Details of the Siemens 8 MW offshore wind turbine are provided in **Appendix 10-1**.



**Figure 10-1: Siemens 8 MW-class Offshore Wind Turbine**

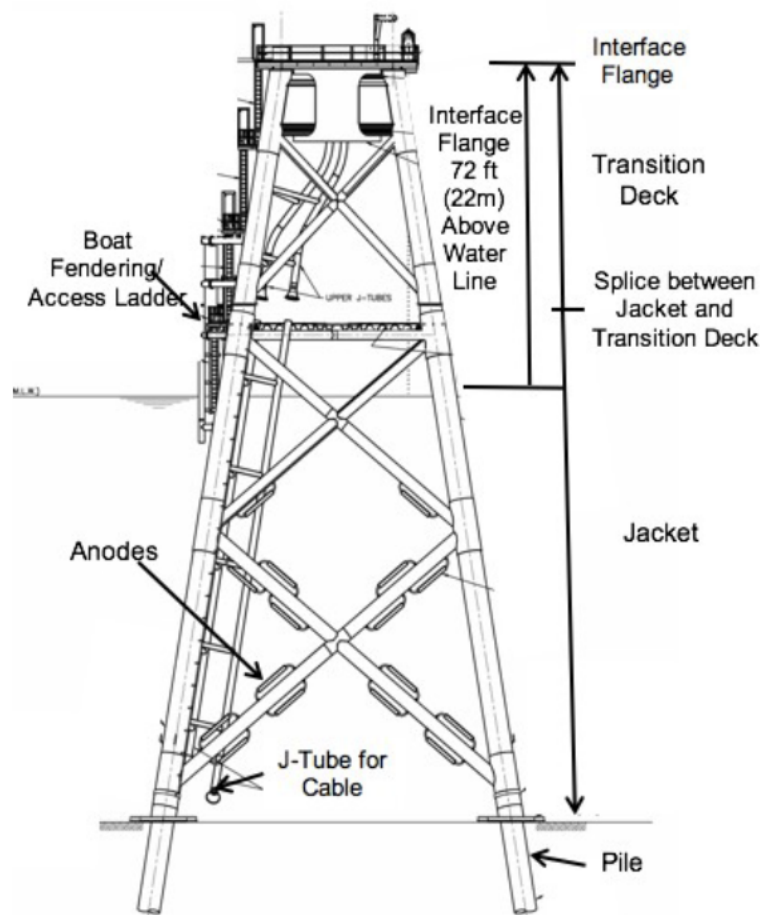
### 10.1.2 Offshore Foundations

The Wind Turbines will be installed atop purpose-built offshore wind foundations designed specifically for the Project Site. Deepwater Wind has selected Steel Jacket Foundations as the design basis for the Project<sup>11</sup>, detailed in Table 10-3, below. Deepwater Wind successfully deployed a comparable jacket foundation for the BIWF project. The design of the BIWF jacket foundation is shown in Figure 10-2 below. Deepwater Wind selected jacket foundations because the Project Site has similar water depths and sea bottom conditions to that of the BIWF project site.

**Table 10-3: Offshore Foundation Engineering Plan**

OFFSHORE FOUNDATIONS	
<b>i. Type of Technology:</b>	Purpose-built offshore foundations, suitable for the Project Site.
<b>ii. Major Equipment:</b>	Steel Jacket Foundations, suitable for installation in water depths of 100' to 150', or monopiles or gravity-based foundations.
<b>iii. Manufacturer and location of Manufacturing:</b>	Deepwater Wind plans to contract with experienced suppliers of offshore foundations such as Gulf Island Fabricators and EEW to supply the Project's foundations. Components will be fabricated and assembled in various locations which may include Rhode Island and another existing waterfront industrial facilities.
<b>iv. Status of Acquisition:</b>	Deepwater Wind is currently engaged with leading suppliers of purpose-built offshore wind foundations for several projects.
<b>v. Contract Status:</b>	Deepwater Wind has not yet entered into supply agreements for any of the components of the Revolution Wind Farm.
<b>vi. Vendors Considered:</b>	Although steel jacket foundations have been selected as the design basis for the Revolution Project, Deepwater is continuing to evaluate the technical and economic feasibility of other commercially-proven foundation solutions, such as monopiles and gravity base foundations, as we receive detailed survey information about the site. Other vendors like AECOM, Bladt, Smulders are being considered for jackets, monopiles and/or gravity base foundations
<b>vii. History of Operations:</b>	Steel Jackets are one of the most common substructures for European offshore wind projects with over 100 in operation in Europe. The steel jacket foundations were used at Block Island. In addition, fabricators and installers based in the U.S. Gulf of Mexico have five decades of experience employing hundreds of steel jacket foundations for the oil and gas industry. It is a proven technology and one in which U.S. suppliers have a great deal of experience. Also, monopiles and gravity base foundations have successfully been used in many European offshore wind farms
<b>viii. Procurement Strategy:</b>	We anticipate making final design and vendor decisions in 2020 if these Projects receive awards.

<sup>11</sup> While Jacket foundations are the design basis for the Project, the Company is also evaluating the feasibility of other foundation types, such as monopiles and gravity bases. Deepwater Wind may elect to modify the Wind Farm's design to incorporate a different foundation design.



**Figure 10-2: Representative Steel Jacket Foundation Design**

Components of the Project's foundations are planned to be partially fabricated at the Port of Providence ("ProvPort") in Rhode Island. Examples of contractors with whom Deepwater Wind may engage for elements of the foundation scope include:

- *EEW Steel* – one of Europe's leading suppliers of offshore wind foundations.
- *Gulf Island Fabricators* – the builders of the foundations for the Block Island Wind Farm.
- *Montco* – who installed the foundations for the Block Island Wind Farm, to supply vessels and perform foundation installation for the Project.

### 10.1.3 Collection Facilities

Power from the Wind Farm will be collected at an Offshore Transmission Module ("OTM"), to be installed on one of the Wind Turbine Foundations, via a set of 34.5 or 66 kV inter-array cables, connecting the turbines. The Collection Facilities consist of equipment that has been deployed successfully in the offshore



oil and gas industry for over 50 years and in the offshore wind industry for over 20 years, as summarized in Table 10-4 below.

**Table 10-4: Collection Facilities Engineering Plan**

COLLECTION FACILITIES	
i. <b>Type of Technology:</b>	Medium-voltage electrical collection system connecting the generators to a common generation substation.
ii. <b>Major Equipment:</b>	34.5 kV or 66 kV submarine collection cables, a Siemens Offshore Transmission Module ("OTM"), and associated infra-structure to deliver energy from the WTGs to the offshore platform of the Delivery System.
iii. <b>Manufacturer and location of Manufacturing:</b>	Equipment will be supplied from a number of vendors, such as Siemens (for the OTM), LS Cable (for the Cable) and others. While little of this equipment is currently manufactured within the United States, Deepwater Wind will, if selected, encourage its suppliers to use commercially reasonable means to maximize their content within Rhode Island.
iv. <b>Status of Acquisition:</b>	Deepwater Wind's potential suppliers have confirmed the availability of this technology and their capacity to deliver and install the Collection Facilities on our schedule. If this Proposal is accepted, Deepwater Wind will execute the detailed design and will issue an RFQ to the shortlisted suppliers.
v. <b>Contract Status:</b>	Deepwater Wind has not yet entered into supply agreements for any of the components of the Revolution Wind Farm.
vi. <b>Vendors Considered:</b>	Siemens, Prysmian, LS Cable, Nexans, NKT, JDR Cable, DEME, Boskalis, or equivalent
vii. <b>History of Operations:</b>	Decades of experience in submarine power transmission worldwide.
viii. <b>Procurement Strategy:</b>	Deepwater Wind plans to use the Multiple Primes Procurement Strategy. Under this approach, the Collection Facilities will be a single contract package with a dedicated internal Deepwater Wind package manager who will competitively solicit proposals from vendors who are willing and able to provide a comprehensive supply and installation scope.

#### 10.1.4 Delivery Facilities

Power from each Offshore Wind Project will be delivered to its Point of Interconnection via a purpose-built Delivery Facilities consisting of (a) a new offshore substation connected to the Wind Farm's OTM, (b) a submarine cable connecting that offshore substation to a new shore landing, (c) a terrestrial cable from the shore landing to a new onshore substation, and (d) the new onshore substation, including interconnection facilities connecting to the Point of Interconnection, all of which are shown in the electrical one-line attached as *Appendix 10-4*.

**Table 10-5: Delivery Facilities Engineering Plan**

DELIVERY FACILITIES
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<b>i. Type of Technology:</b>	High-voltage electrical transmission system connecting the Wind Farm to the Point of Delivery onshore.
<b>ii. Major Equipment:</b>	Offshore switching station, 230 kV AC submarine cable, 230 kV AC buried terrestrial cable and a substation to accommodate interconnection into the transmission grid.
<b>iii. Manufacturer and location of Manufacturing:</b>	Equipment will be supplied from a number of vendors, such as Siemens (for the substations), LS Cable (for the Cable) and others. While little of this equipment is currently manufactured within the United States, Deepwater Wind will, if selected, encourage its suppliers to use commercially reasonable means to maximize their content within the State of Rhode Island.
<b>iv. Status of Acquisition:</b>	Deepwater Wind's potential suppliers have confirmed the availability of this technology and their capacity to deliver and install the Delivery Facilities on our schedule. If this Proposal is accepted, Deepwater Wind will execute the detailed design and will issue an RFQ to the shortlisted suppliers.
<b>v. Contract Status:</b>	Deepwater Wind has not yet entered into supply agreements for any of the components of the Revolution Wind Farm.
<b>vi. Vendors Considered:</b>	Schweitzer Engineering Laboratories (SEL), J H Lynch and Sons (Lynch), McPhee Electric (McPhee), or equivalent
<b>vii. History of Operations:</b>	The Delivery Facilities will consist of equipment that has been deployed successfully in the offshore oil and gas industry for over 50 years and in the offshore wind industry for over 20 years.
<b>viii. Procurement Strategy:</b>	Deepwater Wind plans to use the Multiple Primes Procurement Strategy. Under this approach, the Delivery Facilities will be a single contract package with a dedicated internal Deepwater Wind package manager who will competitively solicit proposals from vendors who are willing and able to provide a comprehensive supply and installation scope.

## 10.2 Key Equipment Suppliers

*If the bidder has not yet selected the major equipment for a project, please provide a list of the key equipment suppliers under consideration.*

See Section 10.1

## 10.3 Similar Equipment History

*Please identify the same or similar equipment by the same manufacturer that are presently in commercial operation including the number installed, installed capacity and estimated generation for the past three years.*

See Section 10.1

## 10.4 *Technology Readiness*

*For less mature technologies, provide evidence (including identifying specific applications) that the technology to be employed for energy production is ready for transfer to the design and construction phases. Also, address how the status of the technology is being considered in the financial plan for the project.*

Offshore wind farms have been operating successfully in Europe for over 25 years. As of January 2017, Europe has over 12.6 GW<sup>12</sup> of operational offshore wind capacity from over 3,500 grid-connected offshore wind turbines. The European market expects to double to 24.6 GW by 2020<sup>13</sup>. In 2016 alone, the European offshore wind industry added four major new projects totaling 1,558 MW grid-connected capacity<sup>14</sup>. Also, in 2016, 11 projects, worth €18.2bn, reached FID, a 39% increase over 2015. In total 4,948 MW of new capacity reached FID during 2016<sup>15</sup>.

## 10.5 *Equipment List*

*Please indicate if the bidder has a full and complete list of equipment needed for all physical aspects of the bid, including generation facilities, transmission lead lines, , and mandatory and voluntary transmission system upgrades. If not, identify the areas of uncertainty and when the full and complete list of equipment will be identified optimize project while maintain the project's overall commercial operations*

See **Tables 10-2** through **10-5**.

## 10.6 *Long-Lead Identification*

*Please indicate if the bidder has secured its equipment for all physical aspects of the bid, including generation facilities, transmission lead lines, and mandatory and voluntary transmission system upgrades. If not, identify the long-lead equipment and describe the timing for securing this equipment.*

See **Section 12**.

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<sup>12</sup> European Wind Energy Association. Online. Available: <http://www.ewea.org/policy-issues/offshore/> July 2017

<sup>13</sup> *Ibid*

<sup>14</sup> *Ibid*

<sup>15</sup> *Ibid*



## Section 11 Operation and Maintenance

### 11.0 *Approach to Operations and Maintenance*

*Projects that can demonstrate that the operation and maintenance (“O&M”) plan, level of funding, and mechanism for funding will ensure reliable operations during the term of the contract or the tariff are preferred.*

When the Proposed Projects achieve commercial operations in 2023 or 2024, the Block Island Wind Farm, shown in **Figure 11-1**, will have been operating for seven and eight years respectively. Deepwater Wind’s turbine vendor, GE, operates the Block Island Wind Farm from its Schenectady control room while GE’s service organization is performing the maintenance of the turbines. After the usual initial ramp-up, the availability and power production of the GE WTG’s is fully in accordance with the specifications.



**Figure 11-1: GE Wind Turbines Operating at Block Island**

Deepwater Wind will build upon its experience operating and maintaining the Block Island Wind Farm to implement a similarly successful program for these Projects. Deepwater Wind’s Operations and Maintenance Plan is attached as **Appendix 11-1**.

### 11.1 *Operation and Maintenance Plan*

*Provide an O&M plan for the project that demonstrates the long term operational viability of the proposed project. The plan should include a discussion of the staffing levels proposed for the project, the expected role of the project sponsor or outside contractor, scheduling of major maintenance activity, and the plan for testing equipment.*

#### **11.1.1 Wind Farms**

For any Project selected, the following operation and maintenance plans will apply. Deepwater Wind intends to enter into a Service and Maintenance Agreement with the turbine supplier for at least the first 5 to 10 years of the Wind Farm's life. Under that agreement, the turbine supplier will be responsible for planned and unplanned maintenance. That agreement will also require the turbine supplier to meet certain performance guarantees and be subject to financial penalties for underperformance by the equipment. At the end of the 5 to 10-year period, Deepwater Wind may elect to extend the service agreement or self-manage the turbine maintenance program.

In cooperation with the turbine supplier, Deepwater Wind will implement a preventative maintenance program based upon the performance guarantees established in the turbine agreements. This preventative maintenance program will be designed to achieve the guaranteed availability and maintain the levels of output assumed in Deepwater Wind's financial model. The specific schedule of preventative maintenance activities will depend upon the selection of vendors. A separate inspection and preventative maintenance program for the foundation will be implemented and has been accounted for in the financial model.

Deepwater Wind will manage operations and maintenance from a Shore Operations Center to be located in southern New England or eastern Long Island. The Shore Operations Center will house the Project's administrative support offices, the warehouse facility and maintenance shop for all offshore generating units, as well as a marine terminal for the Project's offshore support and logistics vessels. The Shore Operations Center will also house the dispatch and operational control center for each facility, which will use a SCADA system for control and data acquisition from each of the wind turbine generators.

Deepwater Wind will prepare a daily dispatch plan to maximize power production based on a wind resource forecast and equipment availability. Deepwater Wind staff will monitor the actual performance of the offshore generators and compare those with predictive models; condition monitoring systems will continuously be assessing the mechanical and electrical health of the generators.

Deepwater Wind will develop a life cycle plan to execute planned maintenance and major maintenance overhauls.

The typical offshore maintenance work order will be executed by project technicians and, if necessary, by an outside specialty contractor. Deepwater Wind technicians will be competent in Deepwater Wind's operations and maintenance procedures (e.g. Health and Safety and Emergency Response) in order to conduct the required work in a safe and effective manner.

The Project will include support vessels to transport maintenance personnel, contractors, tools and equipment from the shore base to the offshore tower work sites. Marine crane services will be contracted to support offshore major maintenance and heavy lifts, as necessary. Specialized contractors and vessels will be leased when needed to effect scheduled submarine inspection and repair work.

Please see **Appendix 11-1** for complete O&M Plan.

#### 11.1.2 Delivery Facilities

Deepwater Wind will engage a contractor with substantial experience and expertise in the maintenance and repair of the submarine and terrestrial cables. As described in **Section 5.1**, manholes for underground cables will be inspected and tested within six months from in-service date followed by a second inspection and test within 24 months after that. Subsequently, manholes would be inspected and tested every 36 months. Submarine cable terminals will be inspected as part of scheduled substation equipment inspections. The Shore Operations Center will house spare materials and provide a marine terminal for vessels. Key spare materials will be kept on hand in a local maintenance facility.

In the case of the Revolution Expansion, if National Grid Ventures exercises its option to acquire the Delivery Facilities, National Grid Ventures will engage the appropriate contractor. Each piece of equipment has its own maintenance procedure and will follow these standards and procedures which define the inspections required for substation equipment contain detailed descriptions of the safety-related requirements. These procedures and standards will fully align with NERC PRC-005 and NPCC Directory 8 for the protection system maintenance requirement for Bulk Electric System (BES).

The software program Cascade is available for use as the substation asset maintenance management system. This off-the-shelf application was developed and is maintained by Digital Inspections, a KEMA company. It has the capability to track all substation equipment and their inspection and maintenance.

### 11.2 O&M Funding Mechanism

*Describe in detail the proposed O&M funding mechanism and funding levels to support planned and unplanned O&M requirements.*

#### 11.2.1 Wind Farm

Deepwater Wind plans to enter into a long-term service and maintenance agreement with the turbine supplier to cover all planned and unplanned maintenance. For the Wind Turbines, Deepwater Wind assumes that the first five to ten years of operations and maintenance (“O&M”) services will be provided by the turbine vendor on a \$/MWH basis. Deepwater Wind is in discussions with prospective offshore wind turbine suppliers, regarding all the terms and conditions typical for a Turbine Supply Agreement, including the expected cost of the O&M service contract. All planned costs associated with operations and maintenance of the Project are included in the Project’s financial model and are reflected in the pricing

set forth herein. Such pricing is not subject to further adjustment based on operations and maintenance costs.

#### **11.2.2 Delivery Facilities**

For the Revolution Wind Delivery Facilities, if National Grid Ventures exercises the Option, NewCo, as the owner of the Delivery Facilities, will enter into a TSA with Deepwater Wind at a FERC-accepted rate. Such TSA will contain a transmission tariff that explicitly supports all operating and maintenance expenditures, both planned and unplanned, to be made by NewCo under the TSA. Otherwise, and for the Freedom Delivery Facilities, all maintenance will be provided by Deepwater Wind as part of the Wind Farm.

### **11.3 Equipment Warranty Terms**

*Describe the terms (or expected terms) of the warranties and/or guarantees on major equipment that the bidder is utilizing or proposing to utilize.*

Deepwater Wind will negotiate as part of the equipment supply agreement warranty terms typical for the supply of offshore wind turbines, and separately, that of battery energy storage systems. These terms will include but not be limited to guaranteed availability; liquidated damages; warranty term; and provision of O&M services during the warranty period.

### **11.4 O&M Agreements**

*Describe the status of the project sponsor in securing any O&M agreements or contracts. Include a discussion of the sponsor's plan for securing a medium-term or long-term O&M contract, including the expected provider of O&M services.*

#### **11.4.1 Wind Farm**

Deepwater Wind is in discussions with prospective turbine vendors regarding all the terms and conditions typical for a Turbine Supply Agreement, including the expected cost of their O&M service contract. Deepwater Wind anticipates executing a service agreement upon the approval of a PPA and receipt of permits. Deepwater Wind will engage the turbine vendor to provide operations and maintenance for a period of fifteen years.

#### **11.4.2 Delivery Facilities**

For the Revolution Delivery Facilities, if National Grid Ventures exercises its Option, they will take assignment of any O&M agreements or contracts regarding the Delivery Facilities that Deepwater Wind has entered into. Otherwise, and for the Independent Wind Delivery Facilities, all O&M agreements will

be executed by Deepwater Wind as part of the Wind Farm. This will include service contracts with the onshore substation suppliers.

### 11.5 **O&M Experience**

*Provide examples of the bidder's experience with O&M services for other similar projects.*

Deepwater Wind is currently managing the operations and maintenance of the first offshore wind farm in America, the Block Island Wind Farm. In addition, Deepwater Wind's management and investors have extensive experience with onshore wind operations and maintenance, which they will supplement with the operations and maintenance expertise of the turbine supplier. Deepwater Wind will engage the turbine vendor to provide operations and maintenance for a period of fifteen years.

Deepwater Wind just completed its first year of operations at the Block Island wind farm without an injury incident. That includes over 45,000 work hours of higher risk activities such as crew transfers, turbine operations, and our annual maintenance program. This success demonstrates Deepwater Wind's ability to incorporate safety into the design, select quality contractors who take safety seriously and conduct day-to-day operations in a safe manner.

## Section 12 Project Schedule

### 12.0 *Schedule Overview*

*A bidder must demonstrate that its proposal can be developed, financed, and constructed and be technically viable within a commercially reasonable timeframe. The bidder is required to provide sufficient information and documentation that shows that the bidder's resources, process and schedule are adequate for the acquisition of all rights, permits and approvals for the project and for the financing of the project consistent with the proposed project milestone dates.*

*For Eligible Generation Facilities, bidders are required to provide a complete critical path schedule for the project from the notice of selection of the project for contract consideration to the start of commercial operations. For each project element, list the start and end date.*

Deepwater Wind plans to sequentially develop multiple offshore wind farms in the RI-MA WEA. This approach is in the best interest of ratepayers because it allows cost-effective investments in the regional supply chain that can be leveraged across multiple projects, over several years.

### 12.1 *Critical Path Elements*

*Identify the elements on the critical path. The schedule should include, at a minimum, preliminary engineering, financing, acquisition of real property rights, federal, state and/or local permits, licenses, environmental assessments and/or environmental impact statements (including anticipated permit submittal and approval dates), completion of interconnection studies and approvals, procurement, facility contracts, start of construction, construction schedule, fuel supply, and any other requirements that could influence the project schedule and the commercial operation date.*

Deepwater Wind recently completed offshore surveys of the site in connection with the South Fork Wind Farm while surveys for the RI 400 MW Contract are being executed. The Proposed Projects have different critical paths as detailed in **Figure 12-1** and **Figure 12-2** below. A larger version of each schedule is attached as **Appendix 12-1**:

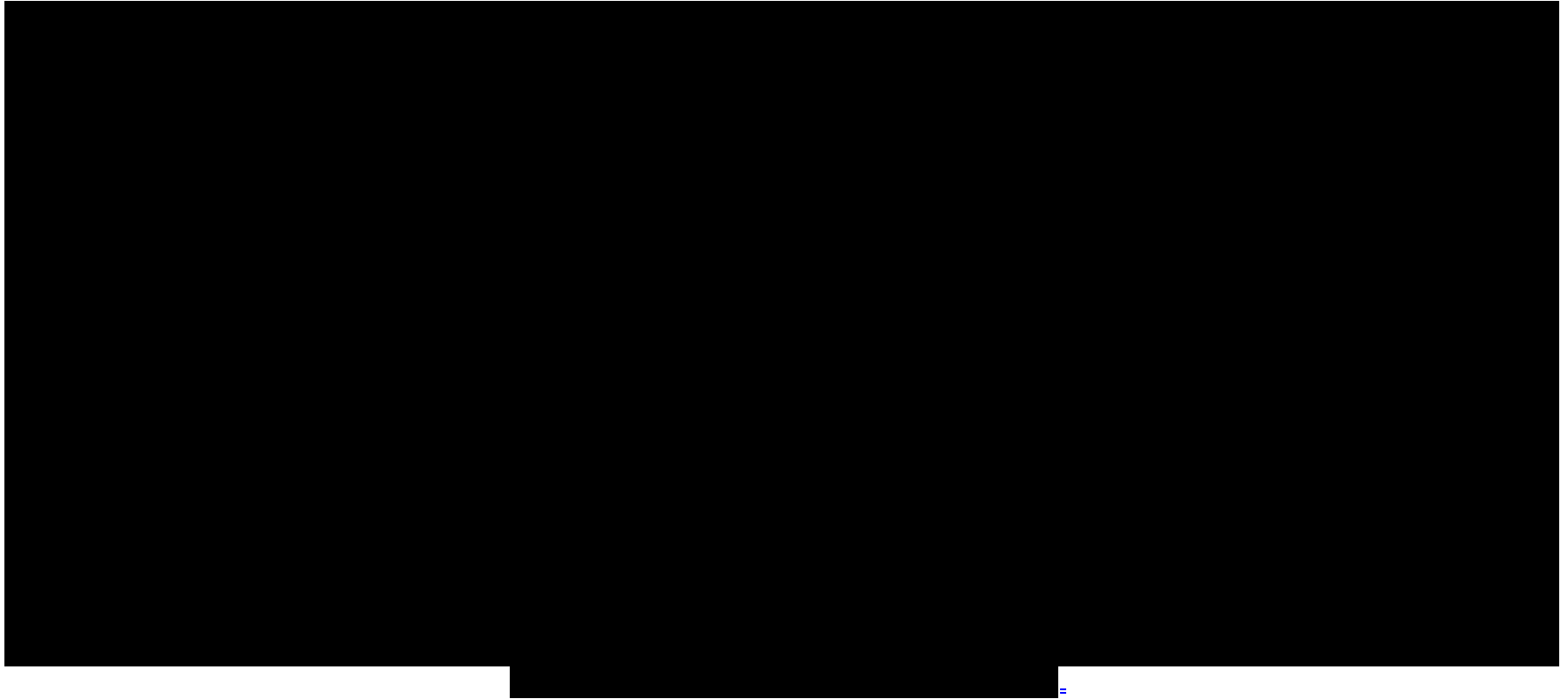
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- 



Note that the schedule offered here shows approximately five years between the receipt of a fully-approved, un-appealable PPA and that of the commercially operating offshore wind farm. The schedule is based on the real amount of time required for the execution of the Block Island Wind Farm. Accordingly, it is conservative and does not assume improvements in the times required for permitting review or equipment lead times. Deepwater Wind believes that such improvements are possible and is committed to delivering the Proposed Project as soon as is practicable.





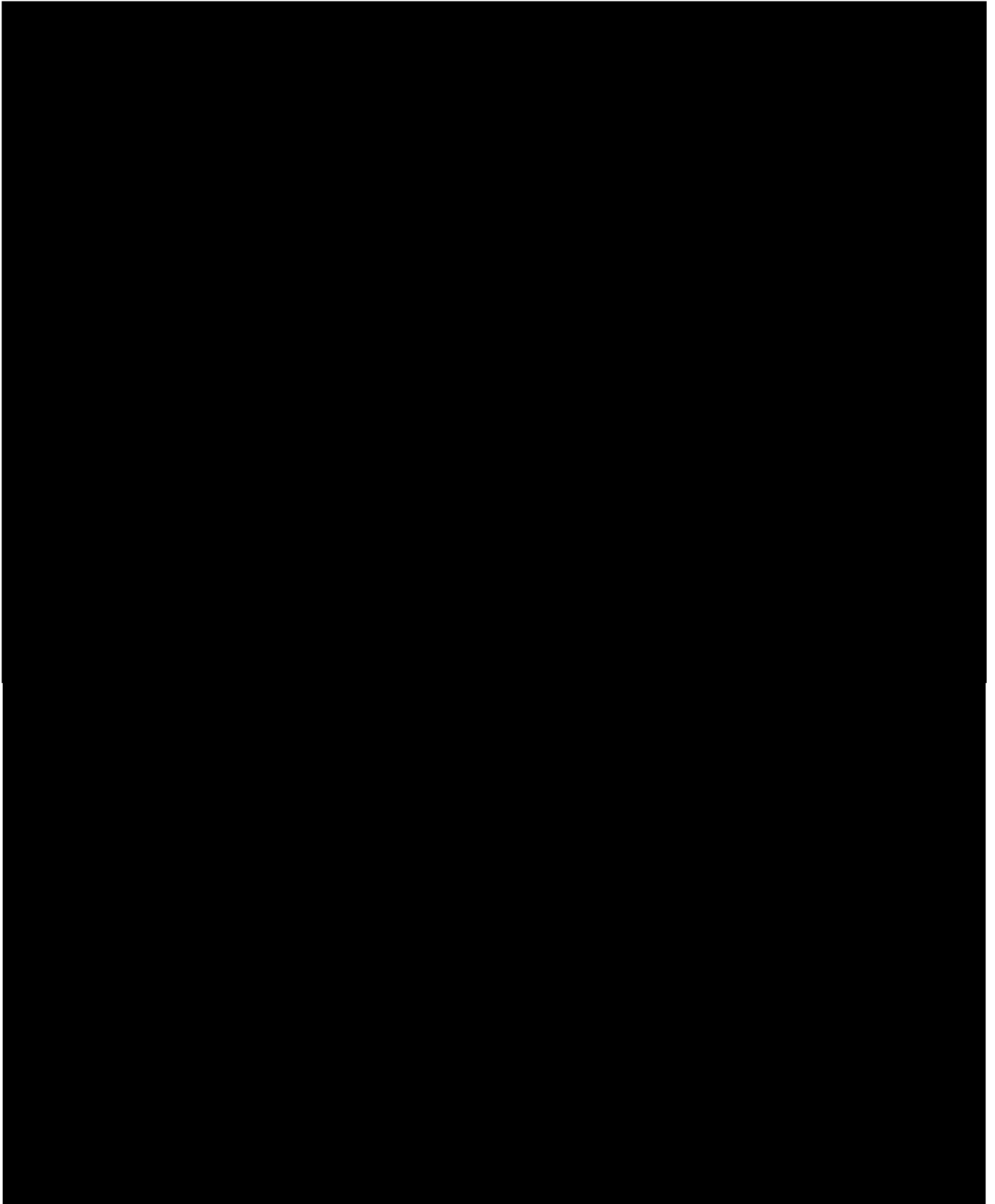


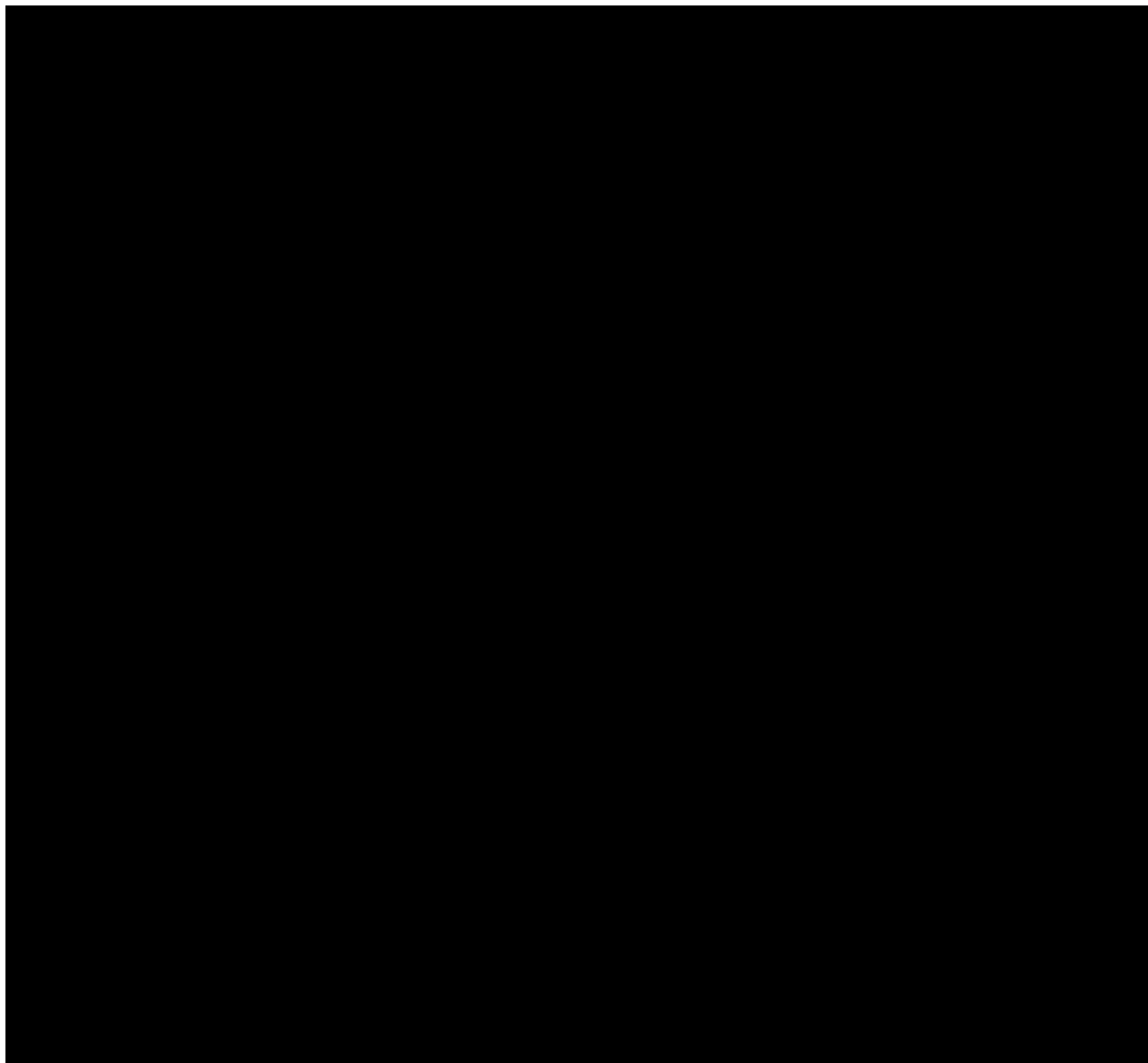
## 12.2 ***Critical Path Status***

*Detail the status of all critical path items, such as receipt of all necessary siting, environmental, and ISO-NE approvals.*

Assuming Deepwater Wind receives notice it has been selected as a winner in this Renewable Energy RFP by December 31, 2018, and that we receive a fully-approved, un-appealable PPA by National Grid by June 1, 2019, the critical path schedule for the completion of the Proposed Projects is as follows:







## Section 13 Project Management Experience

### 13.0 *Overview of Experience*

*Bidders are required to demonstrate project experience and management capability to successfully develop (for a project that includes new facilities or capital investment) and operate the project proposed. The Narragansett Electric Company is particularly interested in project teams that have demonstrated success in projects of similar type, size and technology and, for projects that include new facilities or capital investment, can demonstrate an ability to work together effectively to bring the project to commercial operation in a timely fashion.*

Deepwater Wind has unmatched experience in U.S. offshore wind development through our Block Island Wind Farm project, which began commercial operations in December 2016. Deepwater has gained invaluable experience from working with regulators, stakeholders, vendors, and U.S. construction contractors through the BIWF project.

Deepwater Wind has also become the go-to partner for states up and down the Eastern Seaboard as they seek to develop offshore wind resources. In addition to successfully constructing the first offshore wind farm for Rhode Island, Deepwater Wind has also been awarded contracts to develop the first offshore wind farms serving Connecticut, New York and Maryland.

### 13.1 *Organizational Chart*

*Provide an organizational chart for the project that lists the project participants and identifies the corporate structure, including general and limited partners.*

See **Appendix 13-1**.

### 13.2 *Experience of Project Participants (New Facilities)*

*For a project that includes new facilities or capital investment, provide statements that list the specific experience of the bidder and each of the project participants (including, when applicable, the bidder, partners, EPC contractor and proposed contractors), in developing, financing, owning, and operating generating or transmission facilities (as applicable), other projects of similar type, size and technology, and any evidence that the project participants have worked jointly on other projects.*

In addition to Deepwater Wind's professional staff, over the course of the development, construction and now operation of the Block Island Wind Farm, Deepwater Wind has built a highly qualified team of consultants, engineers, suppliers and contractors. Deepwater Wind intends to use many of the same contractors for the development, permitting, engineering and construction of this Project. Please see the balance of this **0** below for a more detailed description of Deepwater Wind's experience.

Deepwater Wind's management team is leading the design and development of the Project and has engaged leading consultants to support specific aspects of the Project's design and development, including:

- **Site Selection and Permitting.** Deepwater Wind engaged Stantec to prepare a Critical Issues Analysis to support the siting and development of this Project.
- **Array Design.** Deepwater Wind engaged AWS Truepower to optimize the WTG array for the Wind Farm and produce an energy production estimate. The energy production estimate is based on a comprehensive wind resource assessment, including over one year of data that approximates in-situ measurements.
- **Foundation Design.** Deepwater Wind engaged Keystone engineering (New Orleans, LA) to develop a preliminary steel jacket foundation design to effectively support the Wind Turbine in the environmental load conditions expected at the Project Site.
- **Transmission Design.** Deepwater Wind engaged Mott MacDonald to provide a preliminary front end engineering design of the transmission system.

### 13.3 *Experience of Project Participants (Existing Facilities)*

*For a bid that includes existing facilities, provide statements that list the specific experience of the bidder and each of the project participants (including, when applicable, the bidder, partners, EPC contractor and proposed contractors), in owning and operating generating or transmission facilities (as applicable), other projects of similar type, size and technology, and any evidence that the project participants have worked jointly on other projects.*

Not Applicable.

### 13.4 *Management Chart*

*Provide a management chart that lists the key personnel dedicated to this project and provide resumes of the key personnel. For Eligible Facilities that are not yet in-service, key personnel of the bidder's development team having substantial project management responsibilities must have:*

*i. Successfully developed and/or operated one or more projects of similar size or complexity or requiring similar skill sets; and*

ii. For a project that includes new facilities or capital investment, experience in financing power generation projects (or have the financial means to finance the project on the bidder's balance sheet)

Deepwater Wind's execution team has an average of more than 20 years of relevant experience including significant experience in the development, engineering, meteorology, permitting, construction, finance, operations, maintenance and management of energy projects. The Company is led by a veteran management team with extensive experience in developing renewable projects around the globe. Deepwater Wind's management team's resumes are attached as **Appendix 13-2**. A project management organizational chart for the execution of the Project is shown in **Figure 13-1** below and attached as **Appendix 13-1**.

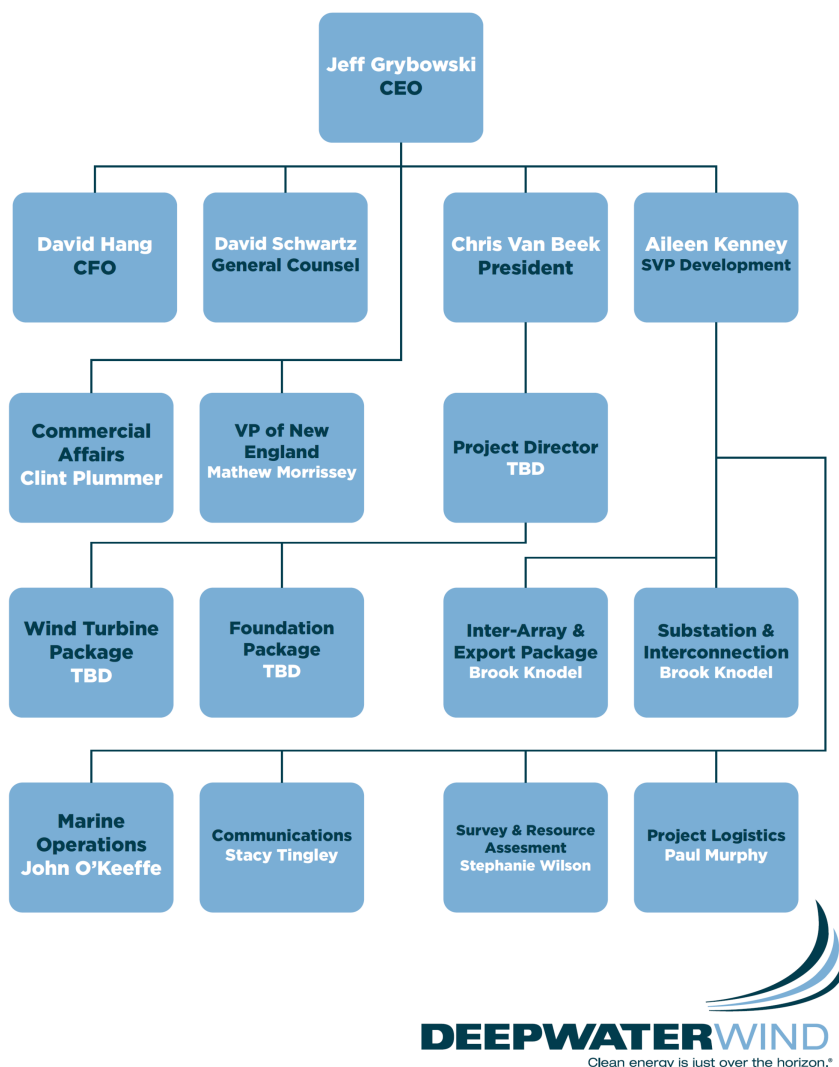


Figure 13-1 Project Management Organizational Chart

### 13.5 Prior Project Experience

*Provide a listing of all projects the project sponsor has successfully developed or that are currently under construction. Provide the following information as part of the response:*

- i. Name of the project*
- ii. Location of the project*
- iii. Project type, size and technology*
- iv. Commercial operation date*
- v. Estimated and actual capacity factor of the project for the past three years*
- vi. Availability factor of the project for the past three years*
- vii. References, including the names and current addresses and telephone numbers of individuals to contact for each reference*

The Company's management and Board have also developed and constructed a number of large and complex energy and infrastructure projects. The Company will draw on this experience, as well as Deepwater Wind's experience from the development of the BIWF project and its portfolio of solar projects, to develop the Project.

Deepwater Wind has been investing significantly in the development of offshore wind projects in the northeast and mid-Atlantic since 2005. The Company has gained unmatched experience in the development of offshore wind through its 30 MW BIWF project, which is the first offshore wind farm constructed in America. The BIWF project has been in commercial operations since December 2016. Deepwater Wind managed all aspects of the development, permitting, engineering, procurement, financing of, and contracting for, the BIWF project, a process that began in 2008. Financing for BIWF was successfully closed in February 2015, making it the first offshore wind farm to be successfully financed in the United States. The \$300 million financing was supported by leading global equity and debt investors.

In July 2013, Deepwater Wind won the Department of the Interior's first competitive lease sale for offshore wind energy areas to acquire BOEM Leases OCS-A 486 and OCS-A 487. Deepwater Wind has been actively developing this site and is on schedule to commence major offshore surveys in the summer of 2017 to support engineering permit applications. While these leases can accommodate the development of approximately 2,000 MW of offshore wind, Deepwater Wind plans to subdivide the leases to support the development of multiple projects in the range of 100 MW to 400 MW. The first of these projects will be the South Fork Wind Farm, a 90 MW offshore wind farm designed specifically to serve Long Island's constrained South Fork. In January 2017, the LIPA Board of Trustees approved a Power Purchase Agreement for the South Fork Wind Farm.

Deepwater Wind does not disclose commercially-sensitive information, such as the availability and capacity factors for our projects.

#### **13.5.1 Block Island Wind Farm**



America's first offshore wind farm – the 30 MW Block Island Wind Farm (“BIWF”) – began commercial operations in December 2016 and generates enough power for 17,000 homes each year. In connection with the BIWF project, Deepwater also developed a transmission system – the Block Island Transmission System – connecting Block Island to the mainland electric grid for the first time. BITS is the first offshore renewable energy transmission system in the United States, a 22-mile submarine cable system linking two new onshore substations, allowing the export of offshore wind energy to the mainland electric grid. Together, these two projects provide the equivalent of firm power to the Block Island Power Company, which enabled it to retire its existing diesel-fired generating station in 2017 when the BIWF project commenced commercial operations.

Deepwater Wind began developing the BIWF and BITS projects in 2008 and has managed all aspects of their development. Deepwater Wind conducted extensive pre-survey coordination with Bureau of Ocean Energy Management (BOEM), U.S. Army Corps of Engineers (USACE), National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (USFWS), and the RI Coastal Resource Management Council (CRMC). The BIWF project required permits or consultation with more than 20 federal, state, and local authorities.

Deepwater Wind engaged key stakeholders early in the process and established constructive relationships with the Wampanoag Tribe of Gay Head (Aquinnah), the Narragansett Indian Tribe of Rhode Island, the commercial and recreational fishing community, and both regional and national environmental non-governmental advocates for marine mammal protection and ocean conservation.

Through the development of the BIWF project, Deepwater has gained a unique set of skills, relationships and data that have informed the design, development schedule, technology choices, construction methodologies, financing strategy, operational procedures and cost estimates for the Project, including:

- A hands-on approach to stakeholder engagement that begins early in the project development process. Deepwater generated widespread support and positive media attention through a concerted community outreach plan.
- Expertise in gathering and evaluating information related to wind and wave conditions; sea bottom type; alternative uses such as commercial fishing; environmental considerations such as avian, bat, marine mammal and sea turtle transit and foraging patterns; relationships with local vendors, including vessel captains, diving contractors, environmental scientists, engineers, consultants and many others who have supported the development of the BIWF project
- Detailed understanding of the latest market developments, trends and costs in the development, site assessment, permitting, construction, operations & maintenance of major offshore wind farms.

- Relationships with key technology and equipment providers, such as General Electric, Siemens, Vestas, ABB, Fred.Olsen, Gulf Island Fabrication, EEW, LS Cable, Keystone Engineering, Mott MacDonald and many others.
- Strong relationships with global financial institutions involved in the renewable energy industry, including those in the offshore wind sector. The Block Island Wind Farm has been very strongly received in the financial markets, and Deepwater Wind is highly confident in our ability to finance the Revolution Project.

BIWF Reference List			
Name	Entity	Title	Address/Phone
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

### 13.5.2 South Fork Wind Farm

Deepwater Wind is actively developing the South Fork Wind Farm – a 90 MW offshore wind farm located approximately 35 miles east of Montauk, NY. The project is to be the first phase of development in the BOEM Leases OCS-A 486 and OCS-A 487 the Company acquired in 2013. It is designed to interconnect with and deliver energy to a constrained part of the Long Island Power Authority's grid in the South Fork – an area commonly known as "The Hamptons" – and is scheduled to come online in December 2022.

Deepwater Wind proposed the South Fork Wind Farm in response to a solicitation seeking new sources of energy and capacity that was specific to the South Fork. This was not a renewables solicitation. In January 2017, the LIPA Board of Trustees approved a Power Purchase Agreement with the South Fork Wind. As with BIWF, Deepwater Wind has implemented a comprehensive stakeholder and community engagement program for the South Fork Wind Farm project that has received strong community support.

SFWF Reference List			
Name	Entity	Title	Address/Phone
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

### 13.5.3 Skipjack Wind Farm

Deepwater is also developing the Skipjack Wind Farm – a new 120 MW offshore wind farm to be located more than 19 miles off the coast of Maryland and interconnecting with the existing Delmarva Power 138 kV transmission system in Ocean City, Maryland.

The Skipjack Wind Farm will be located in the offshore wind energy area designated by the Department of Interior as OCS-A 0482. Based on the many years of development work already completed at this site, the Skipjack Project can be implemented as soon as, if not sooner than, any other utility-scale offshore wind farm in the region. Following receipt of a fully-approved, un-appealable order from the Maryland Public Service Commission in May 2017, the Skipjack Wind Farm will be in-service by the end of 2022.

Skipjack Reference List			
Name	Entity	Title	Address/Phone

#### 13.5.4 Revolution Wind

The Revolution Wind Project is a new offshore wind farm to be located in the RI-MA WEA. Deepwater Wind has been actively developing this site since we acquired it in 2013. In May and June 2018 Deepwater Wind was selected to receive PPAs by the States of Rhode Island and Connecticut respectively, which collectively total 600 MWs of nominal nameplate capacity, as further described throughout this Proposal.

### 13.6 Project Team

*With regard to the bidder's project team, identify and describe the entity responsible for the following, as applicable:*

- i. Construction Period Lender, if any
- ii. Operating Period Lender and/or Tax Equity Provider, as applicable
- iii. Financial Advisor
- iv. Environmental Consultant
- v. Facility Operator and Manager
- vi. Owner's Engineer
- vii. EPC Contractor (if selected)
- viii. Transmission Consultant
- ix. Legal Counsel

In addition to the significant experience of the Deepwater Wind team, as the development of the Project progresses, Deepwater Wind will engage third party consultants to provide additional expertise. In the past Deepwater Wind has worked with, or is considering working with, such firms as:

- Construction Period Lender: Societe Generale, HSBC, SMBC, La Caixa, KeyBank, CoBank, Citigroup<sup>16</sup>
- Operating Period Lender: Societe Generale, HSBC, SMBC, La Caixa, KeyBank, CoBank<sup>17</sup>
- Tax Equity Provider: Citigroup, GE Energy Financial Services<sup>18</sup>
- Insurers: Swiss Reinsurance Company Ltd., AXIS Insurance<sup>19</sup>
- Environmental Consultant(s): VHB, GZA GeoEnvironmental Inc., Stantec
- Owner's Engineer: Keystone Engineering
- EPC Contractors: DEME, Boskalis or Gulf Island Fabrication/EEW for foundations. LS Cable, VBMS, Prysmian or DEME for transmission. Fred Olsen Windcarrier for turbine installation vessel
- Transmission Consultants: Siemens PTI; Mott MacDonald.
- Legal Counsel: Van Ness Feldman; Pullman & Comley LLC. CVA: To be determined in accordance with BOEM regulations
- Remote Operations: Duke Energy

### 13.7 ISO-NE Experience

*Provide details of the bidder's experience in ISO-NE other Markets affected by the bid. With regard to bidder's experience with ISO-NE markets, please indicate the entity that will assume the duties of Lead Market Participant for your Project. Please provide a summary of the proposed Lead Market Participant's experience with each of the ISO-NE markets.*

If Deepwater Wind does not self-designate and act as the Lead Market Participant, it will designate a highly experienced Lead Market Participant during the asset registration process consistent with the tariff.

## Section 14 Alternatives

*Per Section 2.2.4.4 of the Request For Proposals, bidders may submit alternative project proposals, based on varying aspects of the proposed project:*

*Contract Term Length  
Additional Pricing Offer  
Production/Delivery Profile  
In-service Date  
Project Size  
Technology Type*

<sup>16</sup> Indicative list based on the Block Island Wind Farm financing.

<sup>17</sup> Indicative list based on the Block Island Wind Farm financing.

<sup>18</sup> Indicative list based on the Block Island Wind Tax Equity.

<sup>19</sup> Indicative list based on the Block Island Wind Farm insurance syndicate.

*Delivery Location*

*Each submitted proposal must be accompanied by a non-refundable bid fee, which will be used to offset the cost of the evaluation of proposals. Bid fee instructions are provided in Appendix E.*

Alternative project proposals are described in **Section 1**, summarized in **Table 1-1** and detailed in the CPPDs attached as **Appendix 1-1** and **Appendix 1-2**.

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## Section 15 Economic and Environmental Benefits to Rhode Island

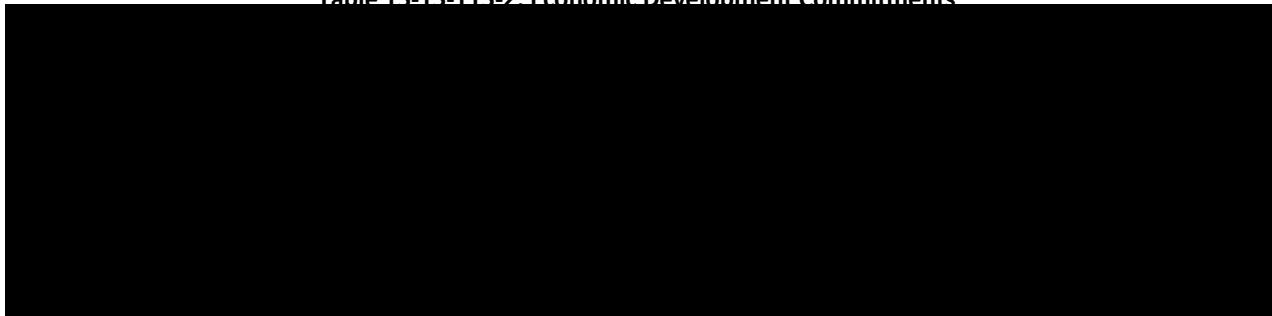
The US offshore wind industry is growing rapidly. A domestic supply chain must be established to deliver on the billions of dollars of projects currently in the pipeline. With this Proposal, Deepwater Wind is offering to leverage and expand our previous commitments to invest and create jobs in the State of Rhode Island, which will further establish Rhode Island as an integral part of the emerging US offshore wind supply chain. In addition to Deepwater Wind's commitments to bolstering the state's offshore wind supply chain, the Company is also committing to meaningful investments in Rhode Island communities.

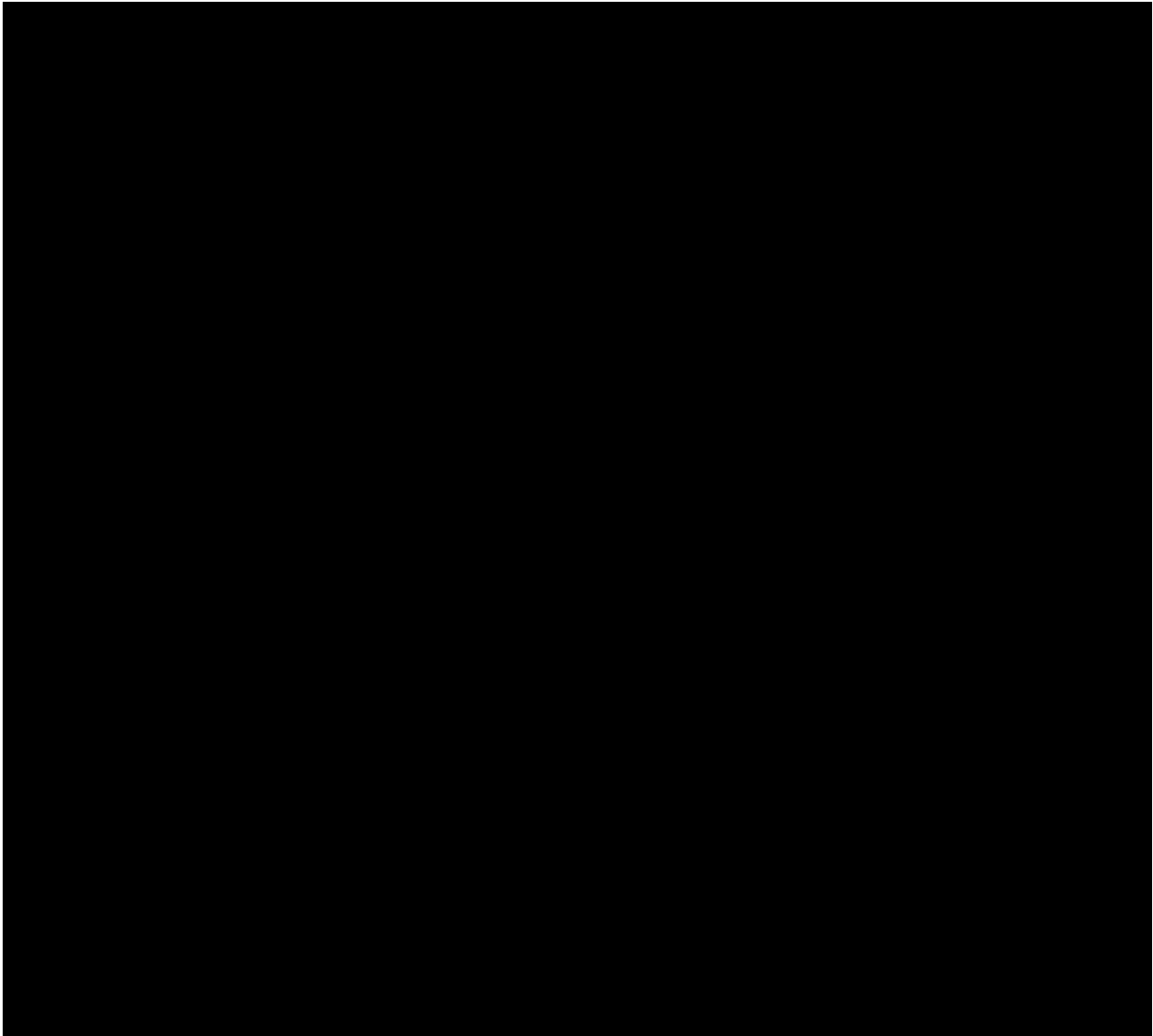
Given Deepwater Wind's previous commitments in relation to the Revolution Wind Project, we are strategically positioned to continue providing economic benefits to Rhode Islanders. If the Revolution Expansion Project is awarded, Deepwater Wind will increase its previous commitment of [REDACTED] of investment in port infrastructure [REDACTED] further improving Rhode Island's port capabilities to serve the offshore wind industry through its anticipated growth over the next decade. Deepwater Wind will also undertake significant construction activities such as foundation fabrication, project component marshalling and offshore substation fabrication, which will create additional jobs for Rhode Islanders while growing the supply chain in the state. Finally, the Revolution Expansion would result in additional operations-phase jobs which would be located at the O&M facility to be constructed in Rhode Island in connection with the Revolution Wind Project.

If the Independent Wind Project is awarded, Deepwater Wind will further scale its construction activities described above, which would substantially increase jobs created in the state. In addition, Deepwater Wind would construct a Crew Transfer Vessel at a facility in Rhode Island, which would be in addition to the work committed to for the Revolution Wind Project. Finally, the Independent Wind Project would substantially increase long-term operations-phase jobs, which would be co-located with the Revolution Wind Project O&M facility to be constructed in Rhode Island.

Table 15-1 below lists the commitments made in connection with the RI 400 Contract, as well as the Revolution Expansion and Independent Wind. In addition, Deepwater Wind commissioned Navigant Consulting, Inc. to evaluate the direct, indirect, and induced jobs, associated earnings, output and economic value added that will result from the two potential projects. The full analysis is provided in **Appendix 15-1**.

**Table 15-15-115-2: Economic Development Commitments**





### 15.1 *Direct Job Creation*

*For the direct economic benefits to the State of Rhode Island, please provide an estimate of the number of jobs to be created directly during project development and construction (for a project that includes new facilities or capital investment), and during operations, and a general description of the types of jobs created, estimated annual compensation, the employer(s) for such jobs, and the location. Please treat the development, construction, and operation periods separately in your response.*



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## 15.2 *Indirect Jobs Created*

*Please provide the same information as provided in response to question 15.1 above but with respect to jobs that would be indirectly created, in the State of Rhode Island, as a result of the proposed project.*

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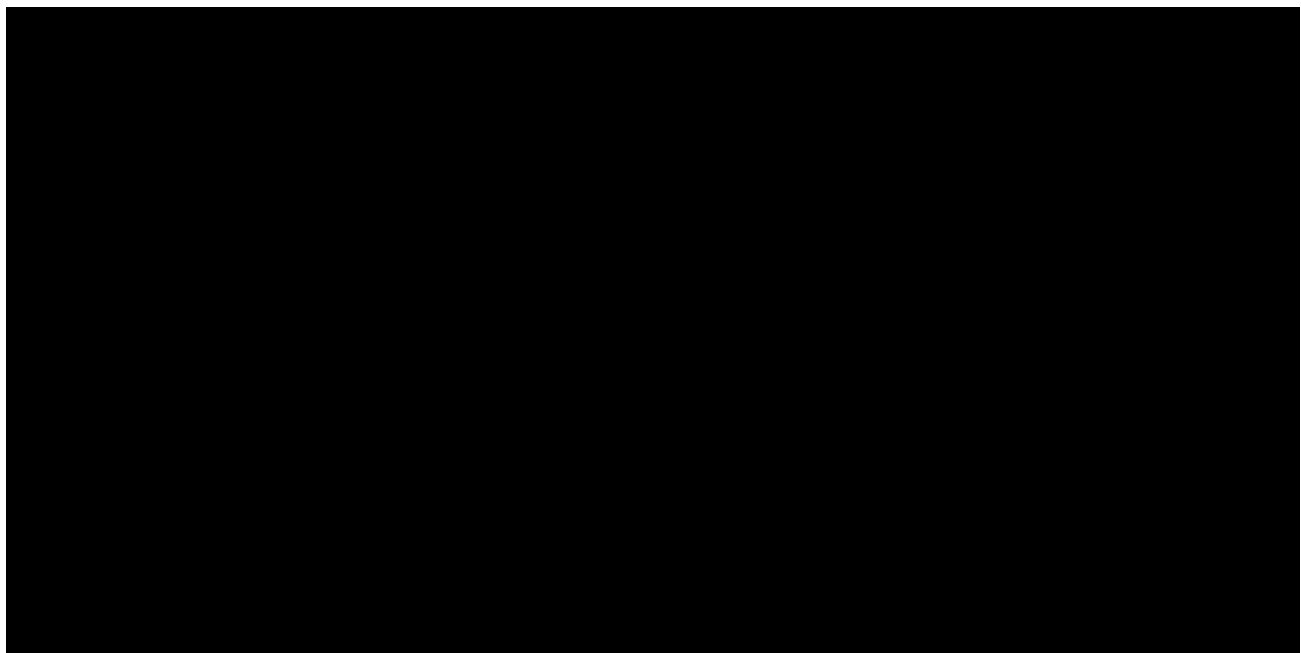
<sup>20</sup> Job-years during the construction phase are defined as full-time equivalent (FTE) jobs multiplied by the number of construction years.



For the RI 400 MW Contract, we estimate that several hundred Rhode Island-based jobs will be created by the indirect and induced effects of the development and construction of the proposed Offshore Wind Projects, specifically in the following sectors:

- Construction
- Environmental and other technical consulting services
- Fabricated structural metal manufacturing
- Architectural, engineering and related services

We anticipate that several hundred more indirect and induced jobs would be created through the commitments we are making in this Proposal. **Tables 15-4** and **15-5** below show the estimate of jobs created, earnings, output, and value added during both the construction and operations phases for each proposal.



### 15.3 *Other Direct Economic Development Benefits*

*Please describe any other direct economic benefits to the State of Rhode Island (either positive or negative) that could result from the proposed project, such as creating property tax revenues or purchasing capital equipment, materials or services for Rhode Island businesses. Please provide the location(s) where these economic development benefits are expected to occur.*

#### 15.3.1 Rhode Island Ports

In connection with the RI 400 MW Contract, Deepwater Wind has committed to lease space at the Quonset Industrial Business Park and ProvPort for the purpose of fabricating components for the Project's foundations and marshalling Project components. The foundation fabrication and marshalling work that is planned to be completed at these facilities will be executed under contracts with qualified contractors. If a Project(s) in this Proposal is/are selected, Bidder commits to the same Rhode Island facilities-based scope of work from the RI 400 MW Contract, and to work closely with the state to ensure that these facilities are well positioned to be an important part of the regional supply chain.

#### **15.3.2 Skilled Labor and Apprenticeship**

Through the Block Island Wind Farm, Deepwater Wind has gained unmatched experience in managing and overseeing every stage of offshore wind development and construction. For the Block Island Wind Farm, Deepwater Wind entered into agreements with local contractors to employ local skilled workers on significant elements of the project. The Bidder will build on this experience to craft agreements with Rhode Island organizations that will ensure the prompt, efficient and safe completion of the Project awarded, particularly with regard to the construction, manufacturing, and installation of the Project.

Deepwater Wind and each of its contractors will make good faith efforts to achieve or exceed the State's apprenticeship program objective. The Bidder's contractors will be made aware of the registered apprenticeship programs.

### **15.4 Other Benefits**

*To the extent not already specified elsewhere in your response, please describe any additional benefits or impacts associated with the proposed project.*

By choosing to procure more offshore wind in this Renewable Energy RFP, National Grid not only ensures the availability of additional offshore wind supply, but it will also put local industry in a unique position to be at the forefront of establishing the infrastructure and expertise needed to support its own renewable energy projects, as well as the projects of neighboring states. This will ensure Rhode Island continues to benefit from the industry's expansion even after it meets its renewable energy goals as detailed in **Section 3.2**.

The Revolution Expansion would result in emissions reduction benefits in the range of \$60 million to \$232 million over the life of the Project, and would reduce GHG emissions at a rate of 185,000 tons per year. Independent Wind would result in \$215 million to \$810 million in benefits over the life of the Project, and would reduce GHG emissions at a rate of 646,000 tons per year.

**Table 15-7. Revolution Expansion Project: Emissions Reductions in New England (2024-2048)**

Period	CO <sub>2</sub>	NO <sub>x</sub>	SO <sub>2</sub> <sup>21</sup>	PM <sub>10</sub> <sup>22</sup>	Total
Annual Tons (1,000)	185	0.059	0.0001	0.009	n/a
Total Tons, 2024-2048 (1,000)	4,619	1.481	0.002	0.231	n/a
Annual Benefit (mil 2018\$) – Low Case	\$2.399	\$0.115	\$0.001	\$0.106	\$2.620
Annual Benefit (mil 2018\$) – High Case	\$9.280	\$0.728	\$0.001	\$0.911	\$10.921
Total Benefit (mil 2018\$) – Low Case	\$59.97	\$2.87	\$0.01	\$2.65	\$65.504
Total Benefit (mil 2018\$) – High Case	\$232.00	\$18.21	\$0.03	\$22.78	\$273.02

**Table 15-8. Independent Wind Project: Emissions Reductions in New England (2025-2049)**

Period	CO <sub>2</sub>	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>	Total
Annual Tons (1,000)	646	0.208	0.0002	0.032	n/a
Total Tons, 2025-2049 (1,000)	16,145	5.189	0.004	0.812	n/a
Annual Benefit (mil 2018\$) – Low Case	\$8.62	\$0.40	\$0.00	\$0.37	\$9.40
Annual Benefit (mil 2018\$) – High Case	\$32.43	\$2.55	\$0.00	\$3.21	\$38.20
Total Benefit (mil 2018\$) – Low Case	\$215.60	\$10.04	\$0.03	\$9.33	\$235.01
Total Benefit (mil 2018\$) – High Case	\$810.86	\$63.79	\$0.07	\$80.20	\$954.92

<sup>21</sup> Gas-fired plants in Navigant's models are assumed to have zero kg/MWh. Actual emissions are at around 0.0001 to 0.0002 kg/MWh.

<sup>22</sup> Particulate matter are commonly classified as PM<sub>10</sub> which are matter that are 10 micrometers or less in diameter, and PM<sub>2.5</sub> which are matter 2.5 micrometers or less in diameter. EPA survey data indicates that approximately 1,540 tons of PM<sub>10</sub> were emitted by generators in New England in 2014 and that 87% of the PM<sub>10</sub> were contained in the subclass of PM<sub>2.5</sub>.

## Section 16 Exceptions to Draft Contract

*Please attach an explanation of any exceptions to the Draft Contract set forth in Appendix D to this Notice, including any specific alternative provisions in a redline format to the Draft Contract. Bidders must include a marked version showing any proposed changes to the Draft Contract with their bid, and it is assumed that bidders would be willing to execute the marked-up contracts included in their bids. **Bidders are discouraged from proposing material changes to the Draft Contract.***

Deepwater Wind has negotiated and executed two PPA's with EDCs in New England and has been awarded two additional contracts for which negotiations have yet to be completed.

In 2010, Deepwater Wind negotiated the PPA with National Grid for our Block Island Wind Farm, located off the coast of Rhode Island. In 2016, Deepwater Wind negotiated the PPA's for our Tobacco Valley Solar Farm, located in Simsbury, Connecticut, which is contracted with all the Massachusetts EDCs. In 2018, Deepwater Wind was awarded a 400 MW contract with National Grid Rhode Island and another 200 MW contract with the Connecticut EDCs. Based on these experiences, Deepwater Wind is highly confident that, if selected, Deepwater Wind and National Grid can successfully negotiate the PPA for the Proposed Projects.

Deepwater Wind notes that it has revised the terms and conditions of the draft PPA provided with the RFP to be consistent with the terms reflected in this Proposal, and those of the RI 400 MW Contract. In the event of a conflict between the PPA and this Proposal, this Proposal shall govern.

Please see [REDACTED] Deepwater Wind's red-line of the form PPA.