Fast 41 Initiation Notice ("FIN")[1]

1. Project Information

1.1. Title

The title of the proposed project is the Bay State Wind Project.

1.2. Sector

The Fast 41 project sector is "Renewable Energy Production."

1.3. Type

The Fast 41 project type is "Wind: Federal Offshore."

1.4. Location

The Project Sponsor (through one or more affiliated special purpose entities) is proposing to build an offshore wind project located on the Outer Continental Shelf off the coast of the Commonwealth of Massachusetts within the area encompassed by the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0500) (the "Lease"), which was issued by the U.S. Bureau of Ocean Energy Management ("BOEM").

2. Project Sponsor Information

2.1. Name

The Project Sponsor is Bay State Wind LLC ("BSW"), which is a 50/50 joint venture of Ørsted North America Inc. ("Orsted NA"), an affiliate of Orsted A/S ("Orsted"), and Eversource Investment LLC ("ESI"), an affiliate of Eversource Energy ("Eversource").

2.2. Contact

The official point of contact for BSW is:

Pernille Hermansen
Project Manager
Permitting Project Management

[1] Sections 4.1 and 4.2 of this FIN contain confidential and privileged trade secrets and commercial or financial information of BSW, and are protected from disclosure under exemption 4 of the Freedom of Information Act, 5 U.S.C. § 552(b)(4). BSW would face significant commercial harm if Sections 4.1 and 4.2 were disclosed to the public, or to other entities that may not be obligated to protect their confidentiality. Since this exemption is designed to encourage submitters to voluntarily provide confidential commercial information to the government, while at the same time safeguarding them from the competitive disadvantages that could result from disclosure, BSW requests confidential treatment of Sections 4.1 and 4.2.

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3. Project Purpose and Objectives

BSW intends to develop, build, operate, and own (through one or more affiliated special purpose entities) an utility-scale offshore wind farm with capacity up to 1,600 MW located 15 to 25 miles off the south coast of Massachusetts within the Lease area (the "Project"). The Project may be developed in phases, and will consist of between 107 to 267 wind turbine generators ("WTG"), associated inter-array cabling, new onshore and offshore substations, export cables, a battery energy storage system, and onshore works for connection to the wholesale electric grid administered by ISO New England ("ISO-NE"). A portion of the Project is being developed to serve the Massachusetts market pursuant to the on-going Commonwealth of Massachusetts' *Act to Promote Energy Diversity* Section 83C procurement process, with a proposed capacity between 400 to 800 MW.[2] Solicitations for additional offshore wind capacity are expected in the states of Connecticut, Rhode Island and New York, in addition to subsequent procurements under Massachusetts' Section 83C process, and BSW may further develop the Lease area to serve these markets. The individual wind turbine size and total number of WTGs may change in order to optimize project cost and performance prior to the construction phase for the Project. The Construction and Operation Plan ("COP") to be filed with BOEM for the Project will seek permits for up to 1,600 MW capacity build-out. Total project costs are estimated between $7.0 billion to $7.7 billion,[3] based on a 1,600 MW build-out.

4. Project Description

An overview of the Project's location, components, and related environmental, cultural, and historic resources is provided in the following subsections.

4.1. Geospatial Information

[redacted]

[2] Commonwealth of Massachusetts. *An Act to Promote Energy Diversity*. H. 4568, 189th General Court (2016). https://malegislature.gov/Bills/189/House/H4568

[3] Based on NREL's US offshore wind project $/kW CAPEX figures (NREL, '2015 Cost of Wind Energy Review', revised May 2017)

Figure 1: *Project Location (BOEM Lease Area OCS-A 0500)*[4]

[4] The map layout is preliminary and intended to be indicative of the portion of the Lease area that is planned for development.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

4.2. Project Components

[redacted]

4.3. Environmental, Cultural, and Historic Resources

Since receiving the Lease in June 2015, BSW has been actively planning, evaluating and characterizing the Project and assessing potential impacts through desktop assessments, field surveys, Agency consultation, and extensive stakeholder outreach. BSW is working with federal and state agencies, tribal governments, and other stakeholders to appropriately assess environmental resources, address issues of concern, avoid and mitigate potential effects, and obtain the necessary permits and approvals to support the construction and operation of the Project. The following subsections provide a preliminary characterization of environmental, cultural, historical, and archaeological resources at the Project location based on existing data as well as the field surveys conducted to date for the Project. Survey protocols for baseline characterization of the resources have been agreed with relevant federal and state agencies through inter-agency meetings and discussions.

4.3.1. Environmental Resources

The Project location hosts a number of important ecological resources that need to be assessed, including fish, bird, mammal, and reptile species.

Fish

Finfish within the Project location can be categorized in two groups based on vertical habitat use: demersal and pelagic. Demersal fishes tend to occur near the substrate and feed on benthic organisms supplemented by organic material that drifts down to the substrate through overlying waters. Pelagic fishes tend to occur in the water column rather than associated with the bottom. There are four *Endangered Species Act* ("ESA") listed fish species with the potential to occur in the Project location: Atlantic salmon (Distinct Population Segment (Salmo salar), shortnose sturgeon (Acipenser brevirostrum), Atlantic sturgeon (Acipenser oxyrhynchus), and New York Bight (A. oxyrinchus). The waters off the coast of southern Massachusetts support a diversity of shellfish/invertebrate species with varying affinities to benthic substrate types. The fine-grained to medium- and coarse-grained sand in the Project location provides habitat for numerous shellfish and invertebrate species. Additionally, benthic and water column habitats within the Project location include essential fish habitat for several federally-managed fish species. As a biological resource, fisheries provide the basis for an important socioeconomic resource in the area.

Avian

A large number of bird species occur in or potentially fly over the Lease location. Massachusetts Clean Energy Center in conjunction with BOEM funded three years of aerial surveys of the Lease area and nearby waters to assist developers characterize the Project site. The only species observed that currently is protected under provisions of the ESA was the roseate tern (Sterna dougallii), although a total of three species of birds that may occur in the Lease area are listed under the ESA as endangered or threatened. The northwestern Atlantic Ocean population of roseate tern is listed as endangered; and the Atlantic Coast population of the Piping Plover (Charadrius melodus) and rufa subspecies of red knot (Calidris canutus rufa) are listed as threatened. In 2017 BSW conducted additional boat-based avian surveys to support existing data for roseate terns. In addition to seabirds, migratory land birds and shorebirds may fly over the Lease area during the spring and fall migration. On the coast, there are several identified colonial bird nesting sites in the vicinity of the export cable corridor and at the landing location at Brayton Point. Finally, seven species of bats are known to occur in southeastern Massachusetts and have been documented on Martha's Vineyard, although little is known about the far offshore presence of these species.

Marine Mammals and Sea Turtles

BSW has used the extensive repository of existing regional marine mammal and sea turtle survey data to establish baseline conditions of the resource across the Project location in support of its survey protocol for baseline characterization. The marine

mammal (cetaceans and pinnipeds) and sea turtle species known to occur within the Northwest Atlantic OCS region, which includes the Project location, include 38 marine mammals and five sea turtles. All 38 marine mammal species are protected by the *Marine Mammal Protection Act*, some are additionally protected by the ESA. All of the identified sea turtle species are protected by the ESA. The relative occurrence of these species varies seasonally, with OCS habitats providing for a variety of important life functions, including feeding, breeding nursery grounds, socializing, and migration.[2] Six endangered species of whale occur within the waters of the north Atlantic OCS, five mysticetes and one odontocete – North Atlantic right whales, blue whales (*Balaenoptera musculus*), humpback whales (*Megaptera novaeangliae*), fin whales (*Balaenoptera physalus*), sei whales (*Balaenoptera borealis*), and the sperm whale (*Physeter macrocephalus*) – although blue whales are not likely to occur in the vicinity of the Project.

4.3.2. Cultural and Historic Resources and Visual Impacts

The majority of southern Massachusetts and Rhode Island coastlines as well as Islands of Martha's Vineyard, Nantucket, and Block Island are highly developed and are popular tourist destinations; these areas support high levels of commercial, military, and recreational vessel traffic. To support the identification of potential viewing and scenic areas that could be affected by the Project, a 25-mile study area was applied around the site, which encompasses the entirety of Martha's Vineyard, the western half of Nantucket, and a small portion of the southern coast of Massachusetts near Cape Cod. The resources within these areas that will have potential views of the Project include a mix of public, private, and residential beaches, natural areas, and publicly accessible walking and biking paths on the southern coast of Martha's Vineyard and Nantucket. Specifically, the 25-mile study area encompasses two state parks on Martha's Vineyard (Long Point Wildlife Refuge Beach and South Beach State Park), four state parks on Nantucket, eight light houses, and the Miacomet Golf Course. The only federal lands identified within the study area is Nomans Land Island National Wildlife Refuge, located approximately 3 miles southwest of Martha's Vineyard. However, due to the potential safety risks associated with unexploded ordnance and the value of this island as a relatively natural island habitat, the refuge is closed to all public uses; therefore, this is not a potential concern for visual impacts. The Project is conducting a visual impact assessment and simulation from viewpoints agreed with stakeholders as part of the COP.

The landscape setting in the vicinity of Brayton Point is comprised of residential, commercial, and industrial development.

4.3.3. Archaeological Resources

The Project appointed a qualified marine archaeologist to conduct a preliminary desktop examination of the Lease area's physiography and geologic development in order to assess the potential occurrence of paleo environments of archaeological significance prior to SAP and reconnaissance level geophysical and geotechnical surveys to ensure there is no impact on cultural and archaeological resources. Some of the relic landforms may not have been conducive to supporting human occupation (e.g., sub-glacial tunnels); however, channel levees may have potential for the preservation of evidence of human

activities. These will be further examined as part of S106 requirements under the *National Historic Preservation Act*. There are no National Register of Historic Places ("NRHP") listed submerged archaeological sites or shipwrecks within the Lease area. Principal data sources have identified shipwrecks and obstructions located within or in the vicinity of the export cable corridor in federal and state waters. There are no NRHP-listed submerged archaeological sites or shipwrecks within the export cable corridor.

4.3.4. Shipping and Navigation

In general, the waters off southern New England experience high levels vessel traffic. The Lease area is to the north of the Nantucket-Ambrose Traffic Separation Scheme and to the southeast of the Narragansett Bay and Buzzards Bay Traffic Separation Schemes. Although there is some commercial traffic passing through the Lease area, the heaviest trafficked routes into and out of southern New England waters are to the west and outside of the area proposed for the first phase of development. Similarly, vessel trip report data illustrates that the areas with the highest levels of recreational fishing activity are to the west of the Lease area.

BSW is conducting a navigational risk assessment as part of its COP submission and has discussed and agreed its approach with US Coast Guard.

4.3.5. Stakeholder Engagement and Communications

The Project has developed and is implementing a detailed stakeholder engagement matrix and communications plan including the organization of a series of four open house meetings to be held in late November 2017. BSW puts great emphasis on stakeholder engagement throughout all phases of the Project life cycle and commenced stakeholder outreach at the start of the Project with a number of key parties and interest groups including federal and state agencies, tribal nations, commercial fisheries, and environmental NGOs. The Project has held several pre-survey meetings with tribal nations in Massachusetts and Rhode Island per BOEM regulations. The Project has held additional workshops and meetings with the tribes to present the results of geotechnical and geophysical surveys and archaeological and cultural assessments across the Lease area.

In February 2017 BSW conducted a successful inter-agency meeting to outline its approach to the baseline characterization work required for the COP. Over forty representatives from state and federal agencies attended and subsequent meetings have been held with BOEM and relevant agencies to discuss and agree survey protocols.

The Project has developed a Commercial Fisheries Communication Plan in accordance with BOEM Guidelines, which includes the appointment of a dedicated fisheries liaison officer who provides a critical link to the fishing industry. Significant outreach has been undertaken with fisheries interests at a project level as well as contributing to industry-wide discussion through state initiatives such as fisheries working groups in Rhode Island and Massachusetts.

5. Technical and Financial Abilities of Project Sponsor

As a 50/50 joint venture between Orsted NA and ESI, BSW benefits from the extensive experience that affiliates of these partners have gained in developing, constructing, and operating complex energy projects. This complementary partnership brings world-leading offshore wind expertise and expert knowledge of transmission together.

5.1. Technical Viability

5.1.1. Orsted

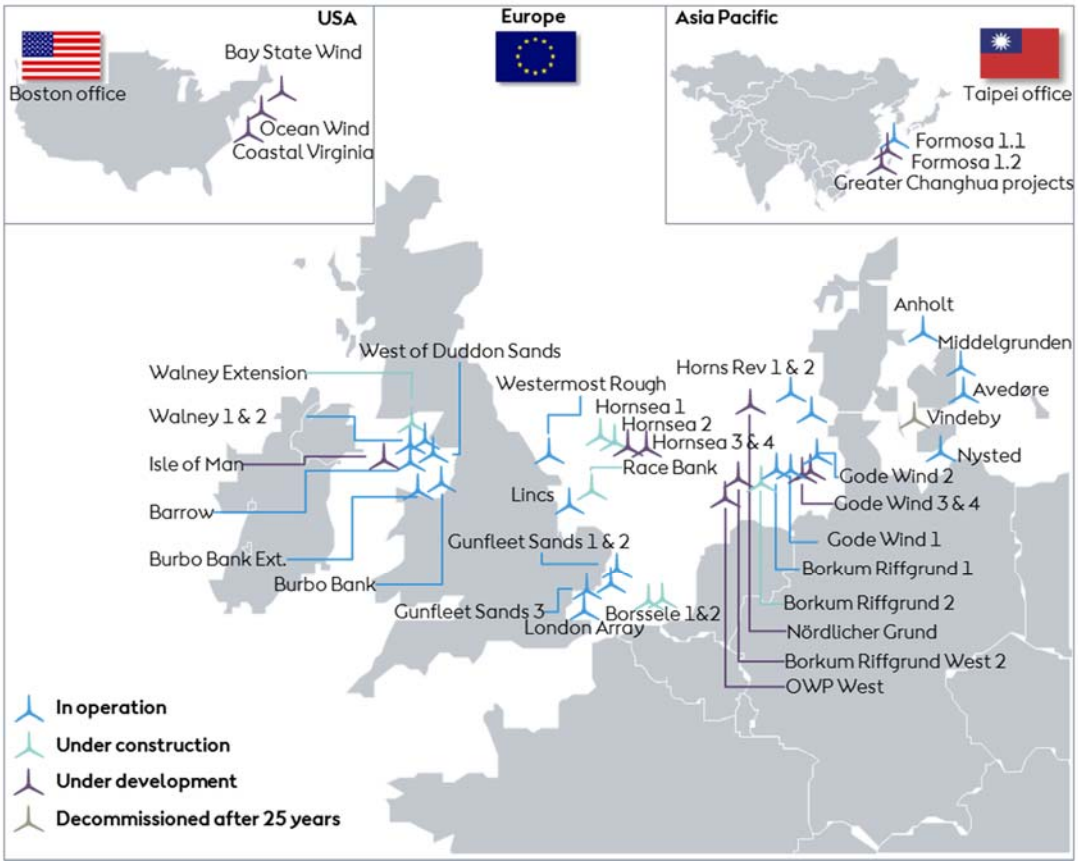
Orsted has industry leading experience and exposure to the rigors and challenges of the offshore wind business. Headquartered in Denmark, the companies' existing business activities span Denmark, the United Kingdom, Germany, the Netherlands, the United States, and Taiwan, as depicted in **Figure 2** below. As a result, Orsted is well practiced in adapting to, and thriving within, new regulatory, consenting, and political landscapes. Its affiliates have constructed 3.8 GW of offshore wind capacity as of November 2017, delivering approximately one-third of all global capacity installed, encompassing some of the largest and most technologically advanced offshore wind farms in the world. Collectively, there are 22 offshore wind farms in operation and seven under construction. Technical design and constructability is retained in-house and is based on almost three decades of experience of engineering, procuring, and constructing offshore wind farms and complex onshore transmission lines. This in-house experience and technical know-how is what sets the Project apart from all other offshore wind developers.

All of Orsted's and its affiliates' experience in offshore wind development, construction, operation, and decommissioning is relevant to the Project. Specific examples of expertise in development and operations of offshore wind energy projects include:

- Permitting of complex projects with input and consent required from numerous stakeholders including regulatory agencies, NGOs, and the fishing industry;
- Design and planning of high-voltage transmission solutions capable of delivering power from offshore wind projects to the identified onshore grid connection point, from as far away as 55 miles;
- Design and construction of offshore wind farms in challenging marine environments, including far from shore projects, high wave heights, high wind speeds and rough sea conditions; and
- Planning and execution of operations and maintenance strategy for offshore wind farms.

Through combining the lessons learned and experience gained from the development, construction, and operation of a number of offshore projects in Europe, Orsted will be capable of designing and implementing technical solutions that are appropriate and proven.

Figure 2: *Orsted Global Offshore Wind Experience*



5.1.2. Eversource

Eversource is an industry leader in timely and efficiently siting, permitting, constructing, and maintaining large complex transmission projects including high-voltage and extra high voltage overhead, underground and hybrid transmission lines, and associated terminal equipment. Eversource, a Fortune 500 energy company, has significant financial resources and invests substantially in transmission facilities. Eversource financed those investments with its strong cash flows, including appropriately accessing the capital market for borrowings.

Eversource's affiliates have successfully completed hundreds of capital projects over the past decade with a proven track record in:

- Successful single state and multi-state project siting and permitting;
- Working closely with other companies to develop major projects; and
- Safely and efficiently constructing transmission projects.

During the construction of these projects, Eversource and its affiliates have implemented a number of innovative solutions to address technical and environmental challenges, including:

- The first and most extensive 345 kV applications of solid core cross linked polyethylene underground cables in the United States;
- Laying marine cable from a purpose-built ship; and
- Constructing overhead transmission support structures from the air, using helicopters.

For the purposes of developing the Project, ESI has replicated Eversource's successful formula by assembling a core team of seasoned professionals who have been involved in the development and construction of numerous large transmission facilities, supplemented by internal and external resources that provide the expertise to support project execution.

5.2. Financial Viability

BSW's financial capability to construct and operate the Project is based on several factors, including the financial strength of its owners, Orsted and Eversource, as well as their combined experience in financing, constructing, and operating offshore wind globally and electric distribution and transmission facilities in New England.

BSW's owners bring unrivaled financial capacity to the Project. Its ultimate parent companies are stable and diverse energy companies, with strong balance sheets indicative of the financial strength needed to complete and operate the Project, as demonstrated by the owners' credit ratings in **Figure 3** below:

Figure 3: *Orsted and Eversource Credit Ratings*

Sponsor	S&P	Moody's	Fitch
Orsted	BBB+ (stable)	Baa1 (stable)	BBB+ (stable)
Eversource	A- (positive)	Baa1 (stable)	BBB+ (positive)

While both parent companies possess extensive experience accessing the capital market, neither are dependent on the capital market to fund their investments. In 2016, the combined total assets of the parent companies exceeded $50 billion and cash flow from operating activities was nearly $4 billion, driven largely by regulated assets and long-term electricity supply contracts. Therefore, the owners can fund their capital contributions to the Project with their parent companies' strong combined cash flows or alternatively by opportunistically accessing the capital market. This financial resilience will insulate the development, construction, and operation of the Project from the inevitable ups-and-downs of the business cycle.

6. Anticipated Financing, Environmental Reviews, and Authorizations

BSW has reviewed federal, state, and local permitting requirements to identify the applicable regulatory framework for the construction and operation of the Project. Orsted and Eversource can rely on extensive experience in permitting projects of similar complexity and have already undertaken significant effort in advancing the permitting process, as detailed in **Section 6.2** below. Further, there is no federal financing associated with the Project.

6.1. Federal Financing

There is no federal financing required for the proposed Project. The Project will be constructed on the balance sheets of Orsted and Eversource as explained in **Section 5.2** above.

6.2. Environmental Reviews and Authorizations

Since receiving the Lease in June 2015, BSW has been actively evaluating and characterizing the Project and assessing potential impacts through desktop assessments, field surveys, agency consultation, and stakeholder outreach. The Project is working with federal and state agencies, tribal nations, and other stakeholders to appropriately assess environmental resources of concern, avoid and mitigate potential effects, and obtain the necessary permits and approvals to support the construction and operation of the Project.

Environmental reviews, permits, and authorizations will be required from a number of federal permitting agencies including the Bureau of Ocean Energy Management, U.S. Army Corp of Engineers, Environmental Protection Agency, National Ocean and Atmospheric Administration, and U.S. Fish and Wildlife Service. Through their affiliates, Orsted and Eversource have extensive experience in permitting projects of similar complexity and have already undertaken a significant effort in advancing the permitting process at this stage in the Project. A complete list of required environmental reviews, permits, and authorizations on the federal, state, and local levels can be found in **Attachment 1**.

The Project benefits from the experience on which Orsted and Eversource can rely in incorporating innovative minimization and mitigation measures to reduce potential impacts to the extent practicable. A summary of the Project's preliminary environmental assessment, including proposed approaches to avoid and minimize potential effects during construction and operation of the Project, is provided in **Attachment 2**, as well as preliminary identification of measures to avoid, minimize, or mitigate such impacts. While potential mitigation measures are identified below, appropriate measures will be identified during the permitting and outreach process in collaboration with federal and state agencies and other stakeholders.

The details summarized in **Attachment 2** are preliminary because the Project has not yet completed its environmental assessment. The final identification of adequate and appropriate mitigation measures will be addressed when detailed knowledge about the site is obtained. The Project is currently undertaking further site characterization in the form of survey activities and desktop studies that will enable the final environmental assessment of potential impacts and the identification of appropriate, adequate, and site-specific mitigation measures for the Project.

7. Eligibility as a Covered Project

The Bay State Wind Project is a Covered Project per 42 U.S.C. §4370m(6). Specifically, the Project:

i. is subject to NEPA,
ii. will require a total investment far in excess of $200 million,

iii. does not qualify for abbreviated authorization or environmental review processes under any applicable law,
iv. is likely to benefit from enhanced oversight and coordination because the Project will require authorization from several federal agencies, and
v. will require an Environmental Impact Statement.

It is noted above that BSW anticipates filing its COP in late 2018. Under guidance jointly issued by the Office of Management and Budget and the Council on Environmental Quality for agency implementation of FAST-41, it is explicitly contemplated that "[f]or many projects, the Initiation Notice is likely to be submitted, and the FAST-41 process may begin, before a completed application is filed."[5] The guidance document identifies alternative procedures for agencies to pursue in developing a Comprehensive Permitting Plan ("CPP") where, as with the Project, the FIN is not submitted concurrent with the application for the COP. BSW, as the Project Sponsor, acknowledges that the initial CPP will necessarily be preliminary and indicative in nature, and keyed to the date the COP is filed. Further, BSW acknowledges that more specific dates for relevant permitting milestones would not be expected until the application is complete.

[5] Office of Management and Budget and Council on Environmental Quality. *Guidance to Federal Agencies Regarding the Environmental Review and Authorization Process for Infrastructure Projects.* M-17-14, 4.28 (2017). https://www.permits.performance.gov/sites/permits.performance.gov/files/docs/Official%20Signed%20FAST-41%20Guidance%20M-17-14%202017-01-13.pdf

Attachment 1: *Permit Matrix*

Consent	Regulatory Instrument	Regulatory Body	Federal or State/Local	Section
Federal Permits/Authorizations				
OCSLA: Commercial Lease of Submerged Lands in Accordance with Outer Continental Shelf Lands Act	Competitive auction or non-competitive bid	BOEM Bureau of Ocean Energy Management	Federal	43 U.S.C §§1331 et seq.
SAP: Site Assessment Plan	Lease document	BOEM Bureau of Ocean Energy Management	Federal	30 CFR §§ 585.610-618
COP: Construction and Operations Plan	Lease document	BOEM Bureau of Ocean Energy Management	Federal	30 CFR §§ 585.621-627
FDS: Facility and Design Report		BOEM Bureau of Ocean Energy Management	Federal	33 USC 1221
FIR: Fabrication and Installation Report		BOEM Bureau of Ocean Energy Management	Federal	
National Environmental Policy Act	EPA Regulations 40 CFR §§ 1500 ET 30 CFR §§ 585.646, 648	BOEM, USACE and cooperating agencies	Federal	National Environmental Policy Act: 42 USC 4321 et seq Council on Environmental Quality NEPA Regulations 40 CFR §§ 1500 ET SEQ BOEM final rule on Renewable Energy Development on OCS
Section 10 permit	33 CFR §§ 320 et seq.	The Corps U.S. Army Corps of Engineers, New England District	Federal	Section 10: Permit for structure in navigable waters

Consent	Regulatory Instrument	Regulatory Body	Federal or State/Local	Section
Section 404 permit	33 CFR §§ 320 et seq.	The Corps U.S. Army Corps of Engineers, New England District	Federal	Section 404: Dredged Discharge Permit in navigable US waters.
Coast Guard confirmation	33 CFR Part 66	U.S. Coast Guard, District 1	Federal	49 USC 44718 and 33 USC 1221
PATON permit: Private Aids to Navigation Permit	33 CFR Part 66	U.S. Coast Guard, District 1	Federal	49 USC 44718
OCS Air Quality Permit and General Conformity Determination	40 CFR Part 60	US Environment Protection Agency (EPA)	Federal	Clean Air Act 42 USC 7401 et seq
National Historic Preservation Act Section 106 Consultation	36 CFR, Part 60 Part 800	Advisory Council on Historic Preservation	Federal	National Historic Preservation Act
Incidental Take Permit (ITP)	50 CFR §402	National Ocean and Atmospheric Administration (NOAA) National Marine Fisheries Service (NOAA Fisheries)	Federal	Endangered Species Act, 16 USC 660 16 USC 1531 et seq.
Incidental Harassment Authorization or Letter of Authorization	50 CFR §216	National Ocean and Atmospheric Administration (NOAA) National Marine Fisheries Service (NOAA Fisheries)	Federal	Marine Mammal Protection Act (16 USC §§ 1361 et seq.)
Magnuson-Stevens Conservation and Management Act	50 CFR Part 600	National Ocean and Atmospheric Administration (NOAA) National Marine Fisheries Service (NOAA Fisheries)	Federal	Magnuson-Stevens Fishery Conservation and Management Act (16 USC §§ 1801 et seq.)

Consent	Regulatory Instrument	Regulatory Body	Federal or State/Local	Section
Endangered Species Act Consultation and ITP	50 CFR Part 13, Part 17, Part 402 50 CFR Part 10, Part 22	U.S Fish and Wildlife Service (USFWS) Northeast Region (Region 5)	Federal	ESA 16 USC 1531 Migratory Bird Treaty Act, 16 USC §§ 703 et seq. Bald and Golden Eagle Protection Act 16 USC §668
U.S. Department of Defense (DoD) consultation		U.S. Department of Defense (DoD)	Federal	
Massachusetts State Permits/Authorizations				
MEPA Certificate	MEPA Regulations 301 CMR 11.00	Executive Office of Environmental Affairs, Massachusetts Environmental Policy Act Office	State	M.G.L. c 30 §§ 61 through 62H
FEIR Certificate: Final Environmental Impact Report Certificate	MEPA Regulations 301 CMR 11.00	Executive Office of Environmental Affairs, Massachusetts Environmental Policy Act Office	State	M.G.L. c 30 §§ 61 through 62H
Coastal Zone Management Program Federal Consistency Certification Letter of Concurrence	Consistency Review with the MCZM Program Policies (15 CFR 923, 15 CFR 930, 310, CMR 20.00 and 21.00)	Executive Office of Environmental Affairs, Coastal Zone Management Office	State	Coastal Zone Management Act Section 307 M.G.L. c.21A, §4A
Consultation under the Ocean Sanctuaries Act	302 CMR 5	Executive Office of Environmental Affairs, Coastal Zone Management Office	State	M.G.L. c. 132A, §§ 12A-18
Certificate of Environmental Compatibility and Public Need	980 CMR 1.00 et seq	Massachusetts Energy Facilities Siting Board (EFSB)	State	M.G.L. c 164, §§69J, 72

Consent	Regulatory Instrument	Regulatory Body	Federal or State/Local	Section
Permission to Construct Electric Transmission Line	220 CMR	Massachusetts Department of Public Utilities	State	M.G.L. c 72
Permit to Access State Highways	720 CMR 13.00	Massachusetts Department of Highways (MassHighway)	State/Local	M.G.L. c. 81, § 21 and M.G.L. c. 85, § 2
Chapter 91 License	310 CMR 9.11(3)	MADEP Massachusetts Department of Environmental Protection	State	The Massachusetts Public Waterfront Act (MGL Chapter 91)
Chapter 401 Water Quality Certification	314 CMR 4.00 and 9.00	MADEP Massachusetts Department of Environmental Protection	State	U.S. Clean Water Act, Section 401 M.G.L. c.21
Wetlands Protection Act Order of Conditions	310 CMR 10.00	DEP Bureau of Resource Protection - Wetlands and Waterways	State/Local	M.G.L. c.131, § 40
State-listed Threatened Species Consultations	321 CMR 10.00	Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program	State	M.G.L. c 131, § 5B
Consultations under Endangered Species Act and Magnuson-Stevens Act	322 CMR	Massachusetts Division of Marine Fisheries	State	16 USC §§ 1801 et seq.

Consent	Regulatory Instrument	Regulatory Body	Federal or State/Local	Section
Open Space Easement or Grant of Location	Article 97 of the 1972 Amendments for the Massachusetts Constitution	Massachusetts Department of Conservation & Recreation (DCR)	State	M.G.L. C.132A§ 7, C.92 §33, 801 CMR 11.06
Consultation under Section 106 of National Historic Preservation Act	Section 106, National Historic Preservation Act	Massachusetts Historical Commission (MHC)	State	MGL Ch. 9 Sections 27-32
Special Use Permit	312 CMR 2	Massachusetts Board of Underwater Archaeological Resources	State	MGL C. 91, s. 63
Site Plan Review and Special Permit		Local Planning Board, Special Permit Granting Authority, and Board of Appeals	Local	
Wetlands Protection Act Order of Conditions (see DEP Bureau of Resource Protection – Wetlands and Waterways under Massachusetts State Approvals)	310 CMR 10.00	Conservation Commission	Local	M.G.L. c.131, § 40
Rhode Island State Permits/Authorizations				
Consultation under Section 106 of National Historic Preservation Act and Rhode Island Historic Preservation Act	Section 106, National Historic Preservation Act	Rhode Island Historical Preservation and Heritage Commission (RIHPHC)	State	RIGL 42-45
License	Energy Facility Siting Act	Rhode Island Energy Facility Siting Board, Public Utilities Commission	State	RIGL § 42-98-1

Consent	Regulatory Instrument	Regulatory Body	Federal or State/Local	Section
Category B Assent and Submerged Lands Lease	Coastal Zone Management Act 16 USC 1451 et seq.	Rhode Island Coastal Resources Management Council (RICRMC)	State	15 CFR 930 30 CFR 585.611(b); 627(b) Rhode Island Coastal Resources Management Program ([RICRMP] "Red Book") Section 400
Federal Consistency Certification Concurrence	Section 307 of the Federal CZMA	Rhode Island Coastal Resources Management Council (RICRMC)	State	RICRMP and Ocean SAMP
Water Quality Certification (WQC)	Section 401, CWA	Rhode Island Department of Environmental Management (RIDEM), Bureau of Environmental Protection, Office of Water Resources	State	RIGL 42-12
Consultation under the Rhode Island Endangered Species Act; Consultation regarding Fisheries Management	ESA	RIDEM, Bureau of Natural Resources, Division of Fish and Wildlife	State	RIGL 20-37-3
RI Pollutant Discharge Elimination System (RIPDES) General Permit for Storm Water Discharge Associated with Construction Activity	Clean Water Act	RIDEM, Bureau of Environmental Protection, Office of Water Resources	State	RIGL 2-1-20.1, 42-17.1, and 42-17.6

Air Quality

Preliminary Resource Characterization: The nearest points of land to the Lease Area are the islands of Nomans Land and Martha's Vineyard, which are both parts of Dukes County, Massachusetts. Dukes County is designated as marginal nonattainment for the 8-hour ozone standard (2008). Dukes County is designated as unclassifiable or attainment for all other NAAQS. All of the towns on Martha's Vineyard are also included in the Metropolitan Providence Interstate Air Quality Control Region (AQCR 120), which is designated as attainment for all NAAQS.

If any portions of the Project emissions will occur in Rhode Island state waters, the entire state of Rhode Island is designated as attainment for all NAAQS. Rhode Island was previously designated as nonattainment for the 1-hour ozone standard and for the 1997 8-hour ozone standard. However, both of these NAAQS have been revoked by EPA.

Construction: The use of marine vessels and other ancillary equipment during construction will result in temporary emissions across the Project Area. These effects will be limited to the construction period and will be consistent with existing marine vessel emissions in the vicinity of the Project.

Operation: There are emissions associated with marine vessels and other ancillary equipment needed for operation and maintenance of the Project. As discussed in Section 13, the Project will displace energy generated from fossil fuels, thereby reducing air emissions in the region.

Avoidance, Minimization, and/or Mitigation: Construction of the Project will require receipt of an OCS air permit under Section 328(a)(1) of the Clean Air Act. Marine vessels or other equipment used to construct and/or operate the Project will be considered an "OCS source" and the potential emissions from the OCS source (including emissions from vessels servicing the OCS source within a 25-mile radius) trigger federal and/or state permitting rules as if the source were located onshore. The Bidder has initiated consultation with the USEPA regarding air emissions associated with construction and operation of the Project and will receive an OCS air permit for emissions associated with marine vessels and other ancillary equipment used during construction and operation prior to construction. Additionally, activities located in state territorial waters and within state nonattainment areas for national ambient air quality standards (NAAQS) may require a General Conformity determination, as specified in 40 CFR Part 93, Subpart B, to demonstrate that the activity will not interfere with the state implementation plan for air quality control and does not cause or contribute to new violations, and to ensure attainment and maintenance of the NAAQS. Therefore, the Bidder will work with the USEPA and Massachusetts and Rhode Island state agencies regarding the General Conformity determination associated with activities in state territorial waters and within state nonattainment areas for NAAQS.

For terrestrial activities with the potential to generate emissions and/or impact air quality (vehicle emissions, dust, etc.), the Bidder will implement appropriate Best Management Practices (BMP) such as limiting idling time and abating dust as possible; mitigation measures, as appropriate, will be defined through agency and stakeholder consultation.

Community
Preliminary Resource Characterization: As the Project is located 15-25 miles off the coast of Martha's Vineyard, the socioeconomic characteristics of nearby communities, including fishermen, are detailed under Socioeconomics and Land Use. **Construction:** Community benefits from the Project, including jobs and training opportunities and direct financial contributions, are discussed in Section 14. As stated under Socioeconomics and Land Use, commercial and recreational fishermen and other marine users may temporarily be required to avoid the immediate vicinity of installation activities during active construction. **Operation:** Community benefits from the Project, including jobs and training opportunities and direct financial contributions, are discussed in Section 14. Based on consultation with the USCG, the Bidder understand that the USCG does not intend to limit access to the Project Area during operation (see Traffic and Transportation. **Avoidance, Minimization, and/or Mitigation:** The Bidder's extensive stakeholder and community outreach program is detailed in Section 7.5. Since June 2015, the Bidder has been engaging with the local community, from Martha's Vineyard to Boston and the South Coast down to New Bedford, Massachusetts and Tiverton, Rhode Island. In November 2017, the Bidder held four open houses in Massachusetts to better inform the public about the Project and to solicit feedback on benefits and potential concerns related to the Project. As recommended in BOEM's Fisheries Social and Economic Guidelines (2015), Bay State Wind LLC has developed a Fisheries Communication Plan as well as hired a Fisheries Liaison Officer and Fisheries Industry Representative to support active communication and outreach throughout Project development, as discussed in Section 7.5. Coordination with the commercial and recreational fishing industry will also support the identification of key elements of concern that will be evaluated with regard to both species and fishing activities associated with Project development, well as developing consensus regarding appropriate minimization and mitigation measure. Finally, under the National Environmental Policy Act (NEPA), BOEM will complete the appropriate public meetings through scoping and review of the DEIS/FEIS, further engaging with local communities that have the potential to be impacted by the Project.

Cultural Resources

Preliminary Resource Characterization: A preliminary desktop examination of the Project Area's physiography and geologic development, leveraging published resources, determined that paleochannels likely occupy the Lease Area. Principal data sources reviewed to date include the NOAA (2016) Wrecks and Obstruction Database and the BOEM (2013) database for the Atlantic Outer Continental Shelf as well as research files provided through consultation with Massachusetts Board of Underwater Archaeological Resources (BUAR) and Rhode Island Historical Preservation & Heritage Commission (RI HPHC).

Construction: Construction of the Project, particularly bottom-disturbing activities, has the potential to affect submerged archaeological resources as well as terrestrial archaeological and historic architectural resources. However the Project proposes to microsite around any known cultural resources that may be identified through further site characterization work thereby avoiding impacts to these resources.

Operation: Operation of the Project is not expected to impact submerged or terrestrial cultural resources.

Avoidance, Minimization, and/or Mitigation: The Bidder has contracted with R. C. Goodwin & Associates as the Qualified Marine Archaeologist for the Project and has been coordinating with federal and state agencies and the Tribes regarding potential impacts to marine and terrestrial cultural resources, in accordance with Lease requirements and federal and state regulations. In addition to measures identified in the BOEM regulations, the Lease contains several stipulations providing for protection and preservation of archaeological resources. To date, the Bidder has completed a marine archaeological survey prior to submittal of the SAP as well as a reconnaissance terrestrial survey at Brayton Point. In support of the COP and in consultation with BOEM, the Advisory Council on Historic Preservation, Massachusetts Historical Commission, BUAR, RI HPHC, and the Tribes, the Bidder will complete an onshore cultural resource survey, a historic property resource survey, and a marine archaeological resource survey. To date, the QMA has cleared all locations of geotechnical investigations to avoid potential impacts to submerged archaeological resources. The Bidder strives to conduct Project activities in accordance with BOEM's Archaeological Guidelines (2017). As appropriate, the Bidder will site Project components to avoid and/or minimize impacts to submerged and terrestrial archaeological resources. Additionally, the Bidder will develop and implement an Unanticipated Discovery Plan that will identify agency-approved protocols to be implemented in the event that a cultural resource is encountered during construction.

Fisheries

Preliminary Resource Characterization: Finfish within the Project Area can be categorized in two groups based on vertical habitat use: demersal and pelagic. Demersal fishes tend to occur near the substrate and feed on benthic organisms supplemented by organic material that drifts down to the substrate through overlying waters. Demersal species likely to occur in the Project Area include American plaice, Atlantic cod, black sea bass, haddock, monkfish, ocean pout, red hake, scup, skates (barndoor, little, thorny, winter), smooth dogfish, spiny dogfish, silver hake, summer flounder, tautog, windowpane flounder, winter flounder, witch flounder and yellowtail flounder. Pelagic fishes tend to occur in the water column rather than associated with the bottom. Some species remain near the water surface, while others prefer mid-water depths. Depth preferences may vary daily, seasonally, or over an individual's lifetime. Pelagic fishes that are likely to commonly occur in the Project Area include sharks, tunas (including the Atlantic bluefin tuna), bluefish, butterfish, cobia, American eel, American shad, Atlantic herring, Atlantic mackerel, blueback herring, king mackerel, menhaden, Spanish mackerel, and striped bass.[2] Three ESA-listed fish species may occur in the Project Area: Atlantic salmon (*Salmo salar*, Gulf of Maine Distinct Population Segment), shortnose sturgeon (*Acipenser brevirostrum*), and Atlantic sturgeon (*A. oxyrinchus*). Based on video surveys, sand and silt substrates cover more than 80 percent of the Lease area; areas of cobble/rock on the western edge comprise less than 3 percent of the area (Stokesbury 2012; Siemann and Smolowitz 2017).; the invertebrate assemblage typically varies with substrate type (Walsh and Guida 2017); dominant benthic invertebrates include sand dollars, sea stars, clams, and polychaetes (Stokesbury 2012). Sand dollars were also reported dominant in the area by Bethony et al. (2017). . Benthic and water column features have been designated as Essential Fish Habitat (EFH) for dozens of federally-managed fish groundfish and migratory pelagic species in the Project Area (NOAA EFH Mapper 2016; NOAA-GARFO 2016). As a biological resource, fisheries provide the basis for an important socioeconomic resource in the area as discussed above in Community/Socioeconomic and Land Use. Common commercially harvested species documented in the Project Area include sea scallops, several species of skate, red and silver hake (Stokesbury 2012) and monkfish (Siemann and Smolowitz 2017). The Project Area is a known spawning area for commercially harvested squid (Hatfield and Cadrin 2002). Juveniles of several species of flounder were observed in the Lease Area, and winter flounder are suspected of spawning in the area (Siemann and Smolowitz 2017).

Construction: Construction-related impacts to fisheries may include temporary increases in noise and turbidity and permanent changes to substrate and presence of EMF. Mobile fish and invertebrates are expected to temporarily leave the area in response to construction activity. Because identical habitat is widely available in the immediate area, the temporary displacement is not considered significant. Benthic invertebrates that are not able to relocate during construction may be injured or killed by crushing or smothering in the immediate vicinity. However, none of the benthic species is rare or limited in distribution. Populations of benthic organisms would not be diminished by the small area of sea floor that will be disturbed by construction. Within several months of completion of construction, the abundance and distribution of benthic invertebrates is expected to return to pre-construction conditions. The introduction of the foundations will likely support colonization of encrusting invertebrates, which will quickly lead to the development of biogenic habitat and associated communities centered on the structures (Miller et al. 2013). The distribution of mobile species, including lobsters, groundfish, and pelagic predators, will likely shift to take advantage of the new source of shelter and prey.

Operation: Impacts described above related to the introduction of artificial structures will continue as long as the structures are in place, regardless of operation. Whether the change in species assemblage related to the presence of the structure is considered beneficial or adverse depends on the particular species being evaluated. On the whole, the shift toward a structure-based community is considered desirable

because it supports higher trophic level fish that are of commercial and recreational value. Operations and maintenance will large occur at or above the water surface once the foundations are in place. Therefore, disturbance of bottom sediment is expected to be insignificant during the operational period and not increase until decommissioning and removal occurs.

Avoidance, Minimization, and/or Mitigation: Since August 2016, the Bidder has been completing geophysical and geotechnical surveys as well as desktop analysis to identify areas of sensitive benthic habitat to support Project design. The Bidder has also been consulting with federal and state agencies and other stakeholders (universities, commercial and recreational fishermen, etc.) to build a baseline understanding of fisheries resources in the Project Area. This data will support Project development through receipt of COP approval which will include formal consultation with NMFS. To the extent possible, the Bidder will locate foundations outside of areas identified as sensitive benthic habitat to minimize effects. Based on the site characterization studies of the Lease Area and the cable route, the Bidder will identify the best cable installation technologies to be used for the export cable and the inter array cable installation which will include consideration of how to minimize any potential impacts to areas of sensitive benthic habitat.

Avian

Preliminary Resource Characterization: A large number of bird species occur in or potentially fly over the Lease Area. Birds most likely to regularly occur in the area include approximately 19 species of waterfowl, 4 species of loons and grebes, 10 species of shearwaters and petrels, 1 gannet, 2 cormorants, 2 shorebirds (phalaropes), 3 jaegers, 6 alcids (auks), and 20 species of gulls and terns (BOEM 2014). During three years of aerial surveys of the WEA and nearby waters, 25 species of seabirds were identified, with two species of sea ducks, white-winged scoter (*Melanitta deglandi*) and long-tailed duck (*Clangula hyemalis*), occurring in the highest numbers (Veit et al 2016). The only species observed that currently is protected under provisions of the ESA was the roseate tern (*Sterna dougallii*), although a total of three species of birds that may occur in the Lease Area are listed under the ESA as endangered or threatened. The northwestern Atlantic Ocean population of roseate tern is listed as endangered; and the Atlantic Coast population of the Piping Plover (*Charadrius melodus*) and rufa subspecies of red knot (*Calidris canutus rufa*) are listed as threatened. In addition to seabirds, migratory land birds and shorebirds may fly over the Lease Area during the spring and fall. On the coast, there are several identified colonial bird nesting sites in the vicinity of the export cable corridor and at the landing location at Brayton Point. Finally, seven species of bats are known to occur in southeastern Massachusetts and have been documented on Martha's Vineyard (Buresch 1999), although little is known about the far offshore presence of these species.

Construction: Construction of the Project may result in limited habitat loss or temporary displacement or temporary disturbance of avian and bat species due to increased vessel traffic, construction noise, and lighting.

Operation: The perceived risk to birds and bats from the Project would be temporary or permanent displacement and an increased risk of mortality due to collisions with the WTGs as a result of development of the Project. Currently, an ongoing assessment of avian use using both active boat-based surveys (June – October 2017) and existing offshore avian survey data (Veit et al 2016) of the Project has identified minimal use of the Project by avian species protected under the ESA. During the operational phase of the Project, these risks are expected to be minimal across species populations. Additional analysis of avian species and their annual use of the Project are currently underway.

Avoidance, Minimization, and/or Mitigation: After reviewing existing data and consulting with federal and state agencies, the Bidder completed avian surveys in June – October 2017 with a specific focus on identifying roseate terns. No roseate terns were identified during the 10 surveys completed. Other protected species such as red knot and piping plover were not identified during these offshore surveys. A further assessment is required and currently underway before adequate and appropriate mitigation measures can be determined. Such mitigation measures are expected to include BOEM guidelines for lighting to mitigate attracting migratory birds and bats to the Project. Other potential mitigation measures that can be used include adjusting the WTG blade tip height and/or number of WTGs in the design of the Project to minimize potential collisions and siting of WTGs away from areas identified as having high use by avian and bats. Additionally, several onshore cable routing options are being assessed to identify the best location that would have minimal impact on bird and bat species along coastal areas of Massachusetts and Rhode Island.

Marine Mammals and Sea Turtles

Preliminary Resource Characterization: The Bidder has used the extensive repository of existing regional marine mammal and sea turtle survey data to establish baseline conditions of the resource across the Project Area. The marine mammal (cetaceans and pinnipeds) and sea turtle species known to occur within the Northwest Atlantic OCS region, which includes the Project Area, include 38 marine mammals and five sea turtles. All 38 marine mammal species are protected by the MMPA, some are additionally protected by the ESA. All of the identified sea turtle species are protected by the ESA. The abundance, distribution, and occurrence of these species varies seasonally and changes as a result of influences such as prey abundance, water temperature variations, and other factors. The OCS marine waters are habitat for marine mammal and sea turtle species and provide a setting for a variety of important life stages of these species including feeding, breeding, nursery grounds, social conspecific interactions, and migration (Kraus et al. 2016). Five endangered species of whale are known to occur within the waters of the north Atlantic OCS, four mysticetes and one odontocete – North Atlantic right whales (*Eubalaena glacialis*), blue whales (*Balaenoptera musculus*), fin whales (*Balaenoptera physalus*), sei whales (*Balaenoptera borealis*), and the sperm whale (*Physeter macrocephalus*). The North Atlantic right whale is a critically endangered marine mammal species and is currently undergoing several pressure on the species that may lead to extinction (Meyer-Gutbrod EL and Greene CH 2017). Blue whales are the least likely to occur in the vicinity of the Project (NOAA Fisheries 2016). Humpback whales (*Megaptera novaeangliae*), a large whale mysticete species, also occurs; humpback whales were recently delisted. And minke whales (*Balaenoptera acutorostrata*) may occur, a non ESA but MMPA listed mid-sized whale species. Most of the large whale species are found in periods adjacent to their annual migrations either to or from feeding grounds and mating grounds. Some whale species (fin, humpback, and minke whales) are present year-round in the continental shelf and slope waters. The five ESA listed species of sea turtles that may occur, four are the most likely to be found in these waters (leatherback [*Dermochelys coriacea*], loggerhead [*Caretta caretta*], Kemp's ridley [*Lepidochelys kempii*], and green [*Chelonia mydas*]) are known to be present in the waters off the southern New England coast, particularly in summer and fall. Each of these species has the potential to occur in the Lease Area. The leatherback and loggerhead sea turtles are considered common, the Kemp's ridley sea turtle is considered regularly occurring, and the green sea turtle is considered rare (Kenney and Vigness-Raposa, 2009).

Construction: Marine mammals and sea turtles may be affected during site assessment activities as well as during construction. Noise generated from HRG survey equipment, from geotechnical exploration equipment, from pile driving, vessel produced noise, and/or from use of dynamically positioned vessels has the potential to act as a disturbance on marine wildlife. Other non-acoustic potential effects include the increased potential of ship strike. Indirect effects from construction activities which cause impacts could be associated with modification of benthic habitat which in turn may affect prey abundance. Also, increase in turbidity, oil or contaminant spills, waste discharge, and accidental fuel leaks may affect marine wildlife through habitat or water quality changes. These impacts would largely be short-term, limited to the duration of the expected activity.

Operation: Vessel traffic associated with O&M activities has the potential to effect marine mammals and sea turtles due to noise as well as potential vessel collisions, spills, and waste discharge; however, as stated above, these stressors are likely to be short term incident events. With the minimization measures included in operational protocols, affects are expected to be consistent with existing marine traffic in the Project Area and not likely to result in specific impacts to marine mammals or sea turtles. Effects related to the introduction of artificial structures will continue as long as the structures are in place, regardless of operational parameters. Beneficial effects may result from the introduction of the

foundations as they will likely serve as fish aggregates and this could increase the availability of prey in the area. If a ship strike were to occur, it would be an immediate adverse effect and significant impact to the individual.

Avoidance, Minimization, and/or Mitigation: Since December 2015, the Bidder has been engaging with BOEM, NOAA Fisheries, and other stakeholders to identify appropriate measures to avoid, minimize, and/or mitigate impacts to marine mammals and sea turtles during site assessment activities as well as during the construction and operations phase of the Project. Additionally, the Bidder is working with BOEM and NMFS to determine the impact producing factors that must be assessed in the COP with regards to marine mammals and sea turtles in accordance with Lease stipulations and the BOEM Marine Mammal and Sea Turtle Guidelines (BOEM 2013). The COP will encompass consultation with NMFS to ensure that appropriate measures are taken to meet the regulatory requirements of MMPA, ESA, and NEPA as well as the BOEM Marine Mammal and Sea Turtle Guidelines. Other measures to reduce impacts that the Bidder may employ include seasonal work windows, marine mammal monitoring (i.e., Protected Species Observers [PSOs]), shut down protocols, and the use of "soft starts" for noise emitting equipment. Prior to mobilization for construction or operation, environmental awareness trainings for all crew on vessels will be conducted. The Bidder would consult with NOAA Fisheries regarding the potential impacts and subsequent mitigation of the proposed Project on any ESA and MMPA species. If needed, the Bidder would submit any additional required documentation as part of consultation on endangered species including Incidental Harassment Authorization (IHA) requests or a site-specific Marine Mammal Impact Assessment and Avoidance Report. These actions would address effects from noise and plans to mitigate impacts with much greater specificity.

Other Ecological and Biological Resources (including Endangered Species)
Threatened and endangered fish, avian, marine mammals and sea turtles are addressed in their respective sections within this table. The only terrestrial component of this project is the export cable landing location and the onshore substation facilities. **Preliminary Resource Characterization:** A preliminary wetlands review has been completed at the location of the export cable landing and onshore substation; however, a formal wetland delineation including assessment of vernal pools and other significant habitats is scheduled for spring/summer 2018. **Construction:** Installation of the terrestrial cable, as well as construction of the onshore substation has the potential to disturb existing habitats due to trenching and other activities. **Operation:** Operation of the Project is not expected to impact ecological and biological resources as additional land disturbance will not occur during operation. **Avoidance, Minimization, and/or Mitigation:** Impacts to wetlands are regulated under the Clean Water Act through the USACE, MA DEP, and RI DEP. Additionally, in Massachusetts, any project located in, on over, or under tidal waters seaward of the present mean high water (MHW) shoreline is subject to Chapter 91 permitting. As the Project develops, the Bidder will work with federal and state agencies and other stakeholders to avoid impacts to terrestrial ecological and biological resources through micro-siting and time of year restrictions as appropriate. Siting terrestrial Project components in previously disturbed areas (i.e., industrial areas) will further reduce or avoid impacts. Finally, the Bidder will implement appropriate BMPs, developed in consultation with federal and state agencies, to minimize impacts to wetlands and other terrestrial ecological and biological resources such as spill prevention plans, revegetation plans, dust control measures, and establishment of buffer zones.

Landscape and Visual

Preliminary Resource Characterization: The majority of southern Massachusetts and Rhode Island coastlines as well as the islands of Martha's Vineyard, Nantucket, and Block Island are highly developed and/or are popular tourist destinations; these areas support high levels of commercial, military and recreational vessel traffic. The Bidder is conducting an inventory of potentially sensitive viewpoints on mainland Massachusetts and Rhode Island, and on the islands of Martha's Vineyard, Block Island, and Nantucket that may have a direct line-of-sight view towards the Project and where views are not obscured by intervening terrain. Additional sensitive viewpoints may be identified by the public during community engagement. The resources within these areas that are anticipated to have potential views of the project include a mix of public, private and residential beaches, natural areas, and publicly accessible walking and biking paths. The closest viewpoints will be from the southern shores of Martha's Vineyard and Nantucket, located approximately 15 miles north and 19 miles northeast of the Lease Area boundary, respectively. There are two state parks on Martha's Vineyard (Long Point Wildlife Refuge Beach and South Beach State Park), four state parks on Nantucket, light houses, public trails, historic sites, public beaches, and private recreational facilities that would have potential views of the project. The only federal land identified in this area is Nomans Land Island National Wildlife Refuge, located approximately 3 miles southwest of Martha's Vineyard. However, due to the potential safety risks associated with UXO and the value of this island as a relatively natural island habitat, the refuge is closed to all public uses; therefore, this is not a potential concern for visual impacts. The landscape setting in the vicinity of Brayton Point is comprised of residential, commercial and industrial development.

Construction: Construction activities will be visible both onshore and offshore, consisting of substation construction, assembly of foundations in port, delivery and transport of WTG components from port to the construction sites, as well as installation of the onshore cable near Brayton Point. These activities will be visible to the public and will be temporary in nature, lasting only during the construction timeframe. Installation activities associated with installation of the onshore cable will be visible from local viewpoints near Brayton Point during construction; however, this will be limited to the construction period and therefore short term impact. Visibility of offshore construction activities is anticipated to be limited by distance. Vessel traffic between the port and construction site will be visible and noticeable nearshore, but impacts would be negligible because vessel traffic in the area is already high.

Operation: A visual resource assessment will be conducted to assess the anticipated visual impact of the WTGs and associated facilities from potentially sensitive viewpoints. Even if a viewpoint has a direct line-of-sight to the Project, views may be obscured by distance, the curvature of the earth, waves, and weather conditions. It is anticipated that viewers along the Martha's Vineyard and Nantucket coastlines and viewers associated with offshore recreation, may have views of the WTGs. Viewers along the southern coasts of Rhode Island and Massachusetts are anticipated to have limited visibility of the WTGs where they are not obscured by distance and atmospheric conditions, and not screened by intervening vegetation, terrain, and developments. Because of these factors, the WTGs may not be not be noticeable to the casual observer from many mainland locations except on sunny days with very clear visibility and low haze on the horizon. Other factors that affect visibility are elevation of the viewer in relation to the wind farm, the angle of the sun, haze, and wave height. Recreational boaters and other marine users will encounter a modified viewshed during operation of the Project although there is potential that this will create and support a new industry in touring the Project, similar to what has happened off Block Island for the Block Island Wind Farm. At night, FAA-mandated lights on the WTGs would be visible at various distances depending on weather conditions. The visual resource assessment will also consider potential visual

impacts from WTG lighting. The Bidder is actively engaging with federal and state agencies regarding the parameters and expectations of this visual resource assessment to ensure that it satisfies the applicable regulations.

Onshore facilities that would be visible to the public during operations would be limited to the onshore substation that is anticipated to be located in an industrial area. Transmission lines that deliver the power from the wind farm to the onshore substation are anticipated to be located entirely undersea and underground, and would not be visible to the public.

Avoidance, Minimization, and/or Mitigation: In October 2017, the Bidder initiated its landscape and visual impact assessment based on consultation with BOEM, MA SHPO, RIHPHC, and the Tribes. In support of the COP and in accordance with BOEM's COP Guidelines, the Bidder will apply appropriate viewshed mapping, photographic and virtual simulations, computer simulation, and field inventory techniques to determine, with reasonable accuracy, the visibility of the proposed project to sensitive and scenic viewpoints. The onshore substation would be sited in an industrial area. During construction, a Fugitive Dust Plan would be implemented to reduce visual impacts associated with construction activities. The Bidder will ensure that the visual appearance of the substation is compliant with any local land use codes, and will utilize exterior colors that are consistent with other developments in the area. Landscaping in accordance with local guidance will be utilized if required to screen the substation from any potentially sensitive viewers. Lighting at the substation would be limited to what is required for safety and security, and will be directed downwards and. The transmission line would be located undersea and underground and would not be visible to the public after construction.

Oceanography

Preliminary Resource Characterization: The National Oceanographic and Atmospheric Administration's (NOAA) National Data Buoy Center (NDBC) owns and operates buoys which record metocean data in waters around the US and abroad. These datasets are viewable in near-realtime and long-term climatic summaries are available to understand multi-year monthly and seasonal trends in metocean conditions. Two distinct patterns are observed in the wind speed measurements. The winter months exhibit higher average wind speeds and higher mean peak gusts relative to summer months. However, tropical systems, which have the potential to bring hurricane strength winds (>74 mph or 119 km/h) to the Project Area with the highest probability of occurrence in later summer and early fall. While tropical systems also cause temporarily increased wave heights, the monthly statistics for significant wave height (SWH) shows a similar trend to wind speeds, with the lowest mean SWH occurring in the months of May through September.

Tides and currents within the Project Area are modest. Tides are on the order of 3-4 feet (1 m) and currents are primarily tidally-driven and typically low velocity, except where constrained and concentrated in localized areas by large-scale bathymetric features, such as within Vineyard Sound, where currents of 1 to 2 knots charted to occur.

Construction: The Project construction activities will not have any significant impact on the oceanography or meteorology of the Project Area. Offshore construction activities may be impacted by high winds and elevated sea states, and such conditions may temporarily preclude construction operations until conditions subside to workable levels.

Operation: The Project will have no impact on the meteorology of the Project Area. The introduction of subsea structures may affect the flow of currents in the immediate vicinity of the structure, but will not affect the larger-scale oceanography of the Project Area. Maintenance operations and the transportation of maintenance equipment and personnel will need to monitor weather and sea state conditions, and operations may be temporarily suspended until conditions allow work to resume.

Avoidance, Minimization, and/or Mitigation: All structures have been designed and engineered to withstand wind and wave conditions anticipated to potentially impact the Project Area. Careful planning of construction and maintenance activities with regard to the weather conditions and weather forecasts will mitigate the risks to marine operations. Subsea structures will be designed to minimize the potential of scour related to seabed currents. As discussed in Section 11, installed structures will be inspected and monitored at regular intervals to ensure adequate scour protection or mitigation is applied should scour be identified. Similarly, the export cable route will be inspected routinely to ensure the cable is maintaining proper burial depth for protection from external aggression.

Sound, Noise, and Vibration

Preliminary Resource Characterization: The existing acoustic environment within the Project Area both onshore and offshore is characterized by a variety of sounds sources. Sound sources offshore consist of a combination of both natural sounds including but not limited to waves, wind, precipitation and fish/marine mammals as well as anthropogenic sounds such as commercial, military, and recreational vessel traffic. Noise from ships dominates marine waters and emanates from the ships' propellers and other rotating machinery such as the main engines, gearboxes, generators, or fans machinery, the hulls passage through the water, and the increasing use of sonar and depth sounders. Other potential ship-related sources include vortex shedding from the hull, noise generated by pipes open to, and discharging into the sea, and noise associated with the wake. Most shipping contributes in a frequency range of less than 1 kHz. The onshore Project Area is well-populated; therefore, contributors to in-air ambient sound levels would include human activity, vehicular traffic, as well as industrial and commercial sound sources. Background sound levels will vary both spatially and temporally depending on proximity to area sound sources, roadways and natural sounds. Diurnal effects result in sound levels that are typically quieter during the night than during the daytime, except during periods when evening and nighttime insect noise may dominate the soundscape.

Construction: While temporary, Project construction activities will generate noise that may impact both onshore (e.g., residences) and offshore (e.g., marine mammals) receptors. The analysis approach will be discussed with applicable regulatory agencies and modeling will be conducted to evaluate construction-related noise impacts and determine the need for noise mitigation measures. In the offshore environment, construction activities such as pile driving and vessel movements including the use of dynamic positioning thrusters will be reviewed. In particular, pile driving will be extensively analyzed since it produces high levels of acoustic energy with the potential to adversely affect marine species. In-air sound will be generated by the construction of both substations as well as cable installation using horizontal directional drilling.

Operation: Operational sound sources may be both in air ambient sources such and periodic vessel traffic needed to oversee and maintain the offshore facilities, which may be both in air ambient and underwater noise sources. The analysis approach will be discussed with applicable regulatory agencies and modeling will be conducted to evaluate operations-related noise impacts and determine the need for noise mitigation measures, Underwater sound produced by vessel movements is anticipated to be similar to what is produced during construction but will be of relatively short-term duration. In-air sound during operation will mainly be attributed to onshore substation operation; however, the proposed substation will be installed adjacent to an existing substation; therefore, while there may be a cumulative effect, the character of the sound will be consistent with existing conditions. The WTGs are located sufficiently far away from onshore receptors that potential noise impacts from WTG operation are expected to be well below state and local noise criteria.

Avoid, Minimize, or Mitigate: Pertaining to underwater noise, since December 2015 the Bidder has been engaging with BOEM, NMFS and other stakeholders to identify appropriate measures to avoid, minimize, or mitigate impacts to marine mammals and sea turtles during site assessment activities as well as during the construction and operations phase of the Project. The Bidder will conduct detailed underwater and in-air acoustic analyses to assess potential impacts, which determine the feasibility of the Project to comply with applicable regulations and determine if mitigation is necessary. If required, mitigation options will be investigated and further analysis will be conducted in order to minimize impacts and achieve compliance with the applicable regulations.

Socio-economic and Land Use
Preliminary Resource Characterization: Although the Project is largely located offshore, the Bidder recognizes that socioeconomic resources along the Atlantic Coast have the potential to be impacted by the Project and therefore, must be analyzed. The communities along the Massachusetts south coast and the islands of Martha's Vineyard and Nantucket are characterized by both intensive development and/or are popular tourist destinations; these areas support high levels of commercial and recreational activity. The Bidder understands that commercial and recreational fishing in New England have historic and economic significance to the states of Massachusetts, Rhode Island, New York and Connecticut. For the terrestrial component of the Project, current land use is largely industrial. **Construction:** As discussed under Traffic and Transportation, construction of the Project has the potential to temporarily exclude marine users from the Project Area, which may result in temporary impacts to commercial fishermen, shipping, and other marine-based socioeconomic resources. As discussed in Section 14, the Project will bring significant economic benefits to the region, including jobs and training to support the growing offshore wind industry in the U.S. **Operation:** As discussed in Section 14, the Bidder expects to generate an estimated 75 full-time equivalent jobs during the operational life cycle of the Project in addition to industry-wide benefits through supply chain development. As discussed under Community, based on consultation with the USCG, the Bidder understand that the USCG does not intend to limit access to the Project Area during operation. **Avoidance, Minimization, and/or Mitigation:** BOEM intentionally excluded areas designated as "high-value" commercial and recreational fishing areas when siting the Massachusetts WEA; however, interactions with these industries and impacts to the species they target are of significant interest and must be considered. As the lead federal agency, BOEM will be responsible for the NEPA review of the COP, which will include an evaluation of impacts to socioeconomic resources and land use. The Bidder will identify impact-producing factors and analyze potential impacts to socioeconomic resources in the COP. Further, as discussed under Community, and as recommended in BOEM's Fisheries Social and Economic Guidelines (2015), the Bidder has developed a Fisheries Communication Plan as well as hired a Fisheries Liaison Officer and Fisheries Industry Representative to support active communication and outreach throughout Project development. Coordination with the commercial and recreational fishing industry will also support the identification of key elements of concern that will be evaluated with regard to both species and fishing activities associated with Project development, as well as developing consensus regarding appropriate minimization and mitigation measures.

Traffic and Transportation (including Navigation)
Preliminary Resource Characterization: In general, the waters off of southern New England experience high levels of commercial, military, and recreational vessel traffic. The southern edge of the Lease Area is over 20 nmi (37 km) to the north of one of the busiest waterways on the east coast of the United States, the Nantucket-Ambrose TSS. AIS data shows vessels have a high fidelity to the Nantucket-Ambrose TSS lanes, and the traffic transiting in this TSS is far enough removed (greater than 8 nmi from the Lease Area) from the Project Area to not be of concern. Southern New England waters leading up to Rhode Island Sound are heavily trafficked by deep draft commercial vessels including tankers, car carriers, bulk freighters and cruise ships. Based on review of AIS data, the heaviest trafficked routes into and out of southern New England waters are to the west and northwest of the Lease Area. AIS data indicates that the majority of commercial and recreational vessel traffic is contained within the Buzzards Bay Recommended Traffic Route with some additional traffic within the Buzzards Bay TSS and the Narragansett Bay TSS. The former is primarily for vessels maintaining a coastal route through northern Rhode Island Sound, while the TSSs are for larger commercial vessels headed farther offshore. Buzzards Bay TSS is over 14 nmi (26 km) from the closest point of the Lease Area, keeping traffic well outside of the Phase I Development Area. Commercial fishing and recreational boating, including sailboat racing, fishing and whale watching, are also popular in the waters of southern New England. **Construction:** Increased marine vessel traffic during construction of Project has the potential to effect traffic and transportation in the Project Area for a limited period during construction as vessels may be temporarily excluded from the area. Onshore, construction vehicles entering/existing the construction harbors and ports may result in a temporary increase in traffic. **Operation:** Recreational, commercial, and fishing vessel traffic will need to accommodate the additional structures if navigating within the Project Area; these structures will be charted by NOAA. Additional vessel traffic to and from the Project Area associated with O&M activities is discussed in Section 11. **Avoidance, Minimization, and/or Mitigation:** Prior to and during construction, the Bidder will be working with USCG and other stakeholders to provide notice of intended operations in the Lease Area and along the export cable route through the use of Local Notices to Mariners. In October 2017, the Bidder initiated a Navigational Safety Risk Assessment based on consultation with BOEM, USCG and the DoD. The NSRA is required to support BOEM's review of the COP and will follow the USCG Navigation and Inspection Circular (NVIC) 02-07, "*Guidance on the Coast Guard's Roles and Responsibilities for Offshore Renewable Energy Installations* (OREI)." The NSRA will result in identification of potential mitigation measures. Guidance provided by the United Kingdom (UK) Maritime and Coast Guard Agency (MCA) under Marine Guidance Note (MGN) 543 (M+F) has established methods to assess potential risks to mariners and navigation (e.g., radar, shipping lanes etc.). The MCA guidance may serve as a useful tool for supporting the development of the NSRA. Additionally, the USCG will issue a Private Aid to Navigation (PATON) approval for navigation lighting of the structures once the USACE permit is obtained. With regards to terrestrial traffic and transportation, the Bidder will work with local and state authorities regarding appropriate traffic management measures to account for additional vehicle traffic into/out of construction and O&M ports.

Water Resources (including Quality and Flood Risk)
Preliminary Resource Characterization: EPA has ranked both sediment and water quality along the Atlantic Coast including the area associated with Lease Area. The water quality index was based on measurements of five component indicators: dissolved inorganic nitrogen (DIN), dissolved inorganic phosphorus (DIP), chlorophyll a, water clarity, and dissolved oxygen. The sediment quality index is based on measurements of three component indicators: sediment toxicity, sediment contaminants, and sediment total organic carbon (TOC). Based on these parameters water and sediment quality in the Lease Area is classified as "Good" (EPA 2012). The Bidder is evaluating sediment conditions along the marine portion of the export cable to determine the potential for contaminated sediments. **Construction:** Disturbance of sediments during Project activities have the potential to affect water quality in the Project Area, with the primary concern associated with increases of total suspended solids into the water column as well as the potential release of contaminants through spills. Water requirements during construction of the Project will be limited to vessel needs and dust suppression for onshore activities (as needed). **Operation:** Vessel traffic and O&M activities in the Project Area have the potential to impact water quality, primarily due to the risk of spills. Additionally, at the onshore substation, there is a potential for spills of chemicals stored and/or used on site. **Avoidance, Minimization, and/or Mitigation:** The Bidder will implement best management practices to minimize the risk of water quality effects during construction and operation of the Project associated with additional marine vessel traffic (i.e., through spills, discharge of waste) and terrestrial activities. Additionally, the Bidder will work with USACE, MassDEP, RIDEM and other stakeholders regarding adherence to the Massachusetts Ocean Management Plan and the Rhode Island Ocean Special Area Management Plan. Appropriate erosion control measures will be developed for the terrestrial portions of the Project. Massachusetts and Rhode Island both maintain handbooks and standards related to water quality. Floodplain information is provided in Section 6.4.

1 Project Area encompasses the Lease Area as well as the waters through which the export cable will transect, the terrestrial portion of the export cable, and the onshore facilities (i.e., substation).

2 Impacts to historic properties due to modifications of the viewshed, and associated avoidance, minimization, and mitigation measures, are discussed in "Landscape and Visual".

References for this table are provided in Attachment 7-5.

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