Attachment H

Massachusetts Coastal Zone Management Act Consistency Certification

New England Wind
Lease Area OCS-A 0534

Massachusetts Coastal Zone Management Act Consistency Certification

September 2022

Submitted by
Park City Wind LLC

Submitted to
Massachusetts Office of Coastal Zone Management
251 Causeway Street
Suite 800
Boston, MA 02114-2138

Prepared by
Epsilon Associates, Inc.

New England Wind
Massachusetts Coastal Zone Management Act Consistency Certification

Submitted to:

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June 2022

TABLE OF CONTENTS

NEW ENGLAND WIND MASSACHUSETTS COASTAL ZONE MANAGEMENT ACT CONSISTENCY CERTIFICATION

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

New England Wind is the proposal to develop offshore renewable wind energy facilities in Bureau of Ocean Energy Management (BOEM) Lease Area OCS-A 0534 along with associated offshore and onshore cabling, onshore substations, and onshore O&M facilities. Park City Wind LLC, a wholly owned subsidiary of Avangrid Renewables, LLC, is the Proponent and will be responsible for the construction, operation, and decommissioning of New England Wind. Figure 1.0-1 provides an overview of New England Wind. The Proponent has prepared this federal Consistency Certification to demonstrate that New England Wind will comply with and will be conducted in a manner consistent with the enforceable policies of the approved Massachusetts Coastal Management Programs (MA CMPs).

The Proponent filed its New England Wind Construction and Operations Plan (COP) with BOEM on July 2, 2020. New England Wind's offshore wind facilities within all of Lease Area OCS-A 0534 and the southwest portion of Lease Area OCS-A 0501, referred to as the Southern Wind Development Area (SWDA), will be developed in two Phases. Phase 1 will be developed immediately south of the Vineyard Wind 1 project, followed by Phase 2, which will be developed immediately south of Phase 1. New England Wind's wind turbine generators (WTGs), electrical service platforms (ESPs), inter-array cables, inter-link cables, and portions of the offshore export cables are in federal waters. The remaining portions of the offshore export cables (approximately 19.5 nautical miles [36.1 kilometers] of each offshore export cable) are in Massachusetts waters. All onshore facilities are located in the Town of Barnstable, Massachusetts.

In June 2020, the Proponent submitted a statement of consistency with the Massachusetts Coastal Zone Management's (MA CZM) enforceable program policies to the Massachusetts Executive Office of Energy and Environmental Affairs (EEA #16231) and MA CZM as Attachment E of the New England Wind 1 Connector Environmental Notification Form (ENF)[1]. The consistency statement was prepared for the portions of Phase 1 in state jurisdiction (referred to as New England Wind 1 Connector). The following federal consistency review builds upon the previous consistency statement and also addresses both Phases 1 and 2 of New England Wind in state jurisdiction, as well as New England Wind activities in federal waters "with reasonably foreseeable effects on any land or water uses or natural resources of the Massachusetts coastal zone," in accordance with 301 CMR Part 20.04(1).

A summary of New England Wind's facilities and activities is provided in Section 2. Section 3 demonstrates how New England Wind, as described in Section 2 and more completely in the New England Wind COP, complies with each of the MA CMPs applicable enforceable policies. Based upon the analyses presented herein and, in the COP, the Proponent certifies to the MA CZM that:

> *The proposed activities described in detail in the New England Wind COP comply with Massachusetts' approved coastal management program and will be conducted in a manner consistent with such program.*

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1 At the time the ENF was filed, the proposed development was referred to by its previous name "Vineyard Wind Connector 2."

This certification is made in accordance with the requirements of the Federal Coastal Zone Management Act (16 U.S.C. 1451 et seq.) and implementing regulations at 15 CFR Part 930, Subparts D and E; 301 CMR 20.00; and the relevant statutory and regulatory authorities for the Commonwealth of Massachusetts' Coastal Zone Management Plan and Program Policies.

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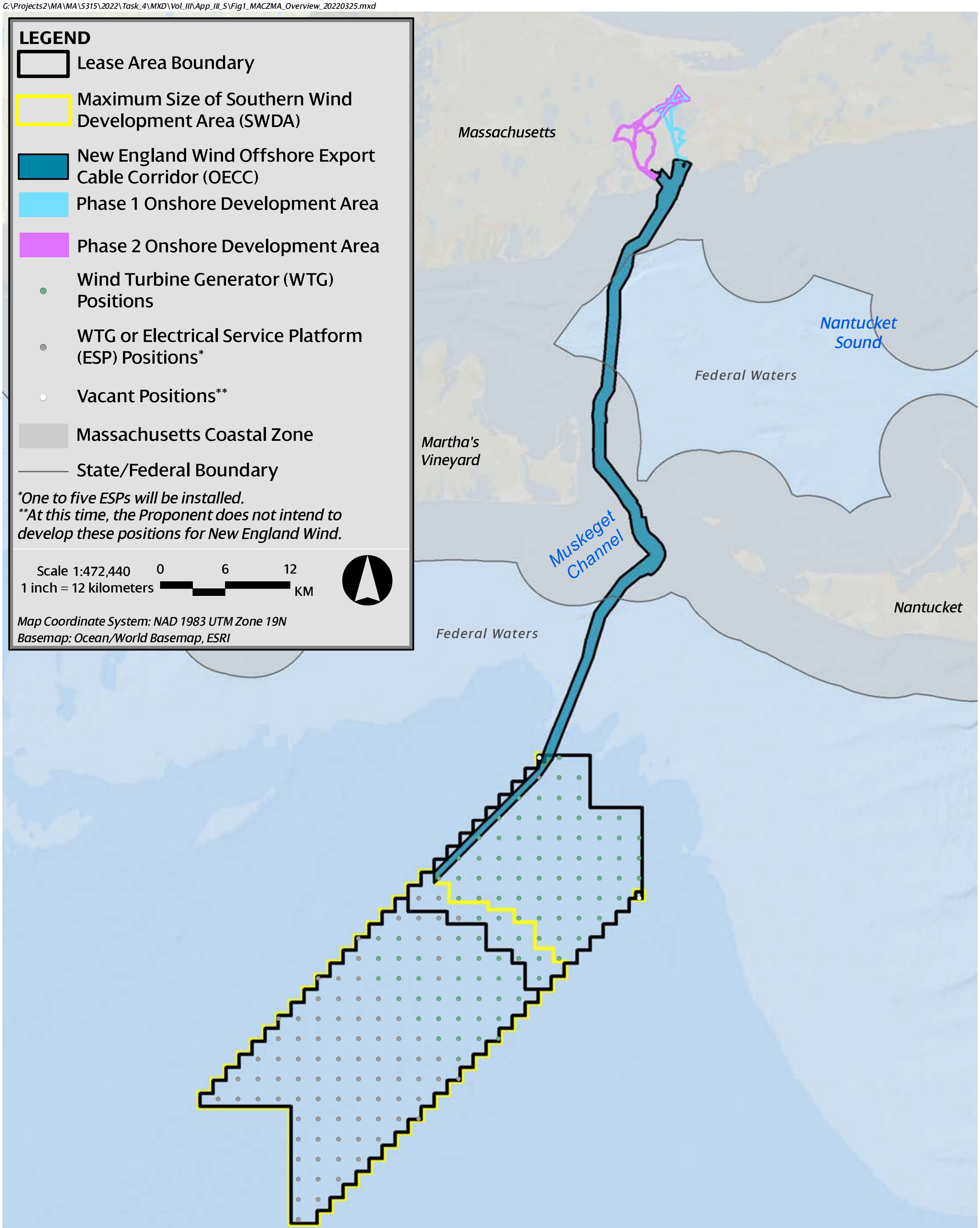

New England Wind
AVANGRID RENEWABLES

Figure 1.0-1
New England Wind Overview

2.0 SUMMARY OF NEW ENGLAND WIND FACILITIES AND ACTIVITIES

2.1 Overview

New England Wind is the proposal to develop offshore renewable wind energy facilities in Bureau of Ocean Energy Management (BOEM) Lease Area OCS-A 0534 along with associated offshore and onshore cabling, onshore substations, and onshore O&M facilities. ("Lease Area OCS-A 0534 is within the Massachusetts Wind Energy Area (MA WEA) identified by BOEM, following a public process and environmental review, as suitable for wind energy development. Park City Wind LLC, a wholly owned subsidiary of Avangrid Renewables, LLC, is the Proponent of this Construction and Operations Plan (COP) and will be responsible for the construction, operation, and decommissioning of New England Wind.

New England Wind's offshore renewable wind energy facilities are located immediately southwest of Vineyard Wind 1, which is located in Lease Area OCS-A 0501. New England Wind will occupy all of Lease Area OCS-A 0534 and potentially a portion of Lease Area OCS-A 0501 in the event that Vineyard Wind 1 does not develop "spare" or extra positions included in Lease Area OCS-A 0501 and Vineyard Wind 1 assigns those positions to Lease Area OCS-A 0534. For the purposes of the COP, the Southern Wind Development Area (SWDA) is defined as all of Lease Area OCS-A 0534 and the southwest portion of Lease Area OCS-A 0501, as shown in Figure 1.0-1.

New England Wind will be developed in two Phases with a maximum of 130 wind turbine generator (WTG) and electrical service platform (ESP) positions. Phase 1, also known as Park City Wind, will be developed immediately southwest of Vineyard Wind 1. Phase 2, also known as Commonwealth Wind, will be located southwest of Phase 1 and will occupy the remainder of the SWDA. Each Phase of New England Wind will be developed and permitted using a Project Design Envelope (the "Envelope"). This allows the Proponent to properly define and bracket the characteristics of each Phase for the purposes of environmental review while maintaining a reasonable degree of flexibility with respect to the selection of key components (e.g. WTGs, foundations, submarine cables, and ESPs). To assess potential impacts and benefits to various resources, a "maximum design scenario," or the design scenario with the maximum impacts anticipated for that resource, is established (see Section 3 of COP Volume III).

The SWDA may be 411–453 square kilometers (km^2) (101,590–111,939 acres) in size depending upon the final footprint of the Vineyard Wind 1 project. At this time, the Proponent does not intend to develop the two positions in the separate aliquots located along the northeastern boundary of Lease Area OCS-A 0501 as part of New England Wind. The SWDA (excluding the two separate aliquots that are closer to shore) is just over 32 kilometers (km) (20 miles [mi]) from the southwest corner of Martha's Vineyard and approximately 38 km (24 mi) from Nantucket.[2] In accordance with US Coast Guard (USCG) recommendations, the WTGs and ESP(s) in the SWDA

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2 Within the SWDA, the closest WTG is approximately 34 km (21 mi) from Martha's Vineyard and 40 km (25 mi) from Nantucket.

will be oriented in fixed east-to-west rows and north-to-south columns with one nautical mile (1.85 km) spacing between positions. This uniform grid layout provides 1 NM wide corridors in the east-west and north-south directions as well as 0.7 NM (1.3 km) wide corridors in the northwest-southeast and northeast-southwest directions.

Four or five offshore export cables—two cables for Phase 1 and two or three cables for Phase 2—will transmit electricity from the SWDA to shore. Unless technical, logistical, grid interconnection, or other unforeseen issues arise, all New England Wind offshore export cables will be installed within a shared Offshore Export Cable Corridor (OECC) that will travel from the northwestern corner of the SWDA along the northwestern edge of Lease Area OCS-A 0501 (through Vineyard Wind 1) and then head northward along the eastern side of Muskeget Channel toward landfall sites in the Town of Barnstable (see Figure 2.3-1 of COP Volume I).[3] The OECC for New England Wind is largely the same OECC proposed in the approved Vineyard Wind 1 COP, but it has been widened to the west along the entire corridor and to the east in portions of Muskeget Channel. The two Vineyard Wind 1 offshore export cables will also be installed within the New England Wind OECC. To avoid cable crossings, the Phase 1 cables are expected to be located to the west of the Vineyard Wind 1 cables and, subsequently, the Phase 2 cables are expected to be installed to the west of the Phase 1 cables.

Each Phase of New England Wind will have a separate onshore transmission system located in the Town of Barnstable.[4] The Phase 1 onshore facilities will ultimately include one of two potential landfall sites, one of two potential Onshore Export Cable Routes, one new onshore substation, and one of two potential Grid Interconnection Routes, which are identified in Figure 2.4-1 of COP Volume I. Phase 2 will include one or two landfall sites, one or two Onshore Export Cable Routes, one or two onshore substation sites, and one or two Grid Interconnection Routes. The potential landfall sites, Onshore Export Cable Routes, and Grid Interconnection Routes are illustrated on Figure 2.4-1 of COP Volume I. The Phase 2 onshore substation site(s) will be located generally along the Phase 2 onshore routes identified in Figure 2.4-1 of COP Volume I.

New England Wind has significant environmental benefits. The electricity generated by the WTGs, which do not emit air pollutants, will displace electricity generated by fossil fuel power plants and significantly reduce emissions from the ISO New England (ISO-NE) electric grid over the lifespan of New England Wind. New England Wind is expected to reduce carbon dioxide equivalent (CO_2e) emissions from the ISO-NE electric grid by approximately 3.93 million tons per year (tpy), or the

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3 As described further in Section 4.1.3 of COP Volume I, the Proponent has identified two variations of the Phase 2 OECC in the event that technical, logistical, grid interconnection, or other unforeseen issues arise during the COP review and engineering processes that preclude one or more Phase 2 offshore export cables from being installed within all or a portion of the OECC.

4 One or more Phase 2 offshore export cables may deliver power to a second grid interconnection point if technical, logistical, grid interconnection, or other unforeseen issues arise. Under this scenario, Phase 2 could include one onshore transmission system in Barnstable and/or an onshore transmission system(s) in proximity to the second grid interconnection point (see Section 4.1.4 of COP Volume I).

equivalent of taking 775,000 cars off the road.[5] New England Wind will significantly decrease the region's reliance on fossil fuels and enhance the reliability and diversity of regional energy supply. In addition to these important environmental and energy reliability benefits, New England Wind is expected to result in significant long-term economic benefits and high-quality jobs.

2.2 Organization of the COP

The New England Wind COP, upon which this Federal Consistency Certification relies, describes all planned activities and facilities associated with the construction and operation of each Phase of New England Wind. The COP is comprised of three volumes:

- Volume I provides a detailed description of New England Wind's location, offshore and onshore facilities, and construction, O&M, and decommissioning activities. Phase 1 is described in Section 3 of COP Volume I and Phase 2 is described separately in Section 4.
- Volume II provides a comprehensive analysis of the data collected during geophysical and geotechnical surveys conducted for New England Wind.
- Volume III details the benefits and potential impacts of both Phases to physical, atmospheric, biological, economic, cultural, and historic resources based on the "maximum design scenario" for each resource.

The remainder of this section summarizes the facilities and activities for each Phase as described in COP Volume I. Potential environmental impacts and avoidance, minimization, and mitigation measures are summarized in Section 4 of COP Volume III.

2.3 Phase 1 of New England Wind

Phase 1 of New England Wind, also known as Park City Wind, will deliver power to one or more Northeastern states and/or other offtake users, including but not limited to 804 MW of power to the ISO-NE electric grid to meet the Proponent's obligations under long-term contracts with Connecticut electric distribution companies. Assuming the necessary permits are issued and financial close is achieved, construction of Phase 1 would likely begin in late 2023 onshore and 2025 offshore. The Envelope for Phase 1 is summarized in Table 2.3-1 below.

[5] The avoided emissions analysis conservatively assumes a minimum total capacity for both Phases of New England Wind of approximately 2,000 MW; however, it is likely that benefits will be greater than those reported. The analysis is based on Northeast Power Coordinating Council (NPCC) New England 2018 emission rates from EPA's Emissions & Generation Resource Integrated Database eGRID2018(v2) released in March 2020. See Section 5.1.2.2 of COP Volume III for additional details.

2.3.1 Phase 1 Construction and Installation

2.3.1.1 Wind Turbine Generators

Phase 1 will consist of 42–62 WTGs oriented in a 1 x 1 NM layout. The potential footprint of Phase 1 within the SWDA includes a portion of Lease Area OCS-A 0501 (see Figure 3.1-4 of COP Volume I), in the event that Vineyard Wind 1 does not develop some or all of its 10 spare positions and Vineyard Wind 1 assigns those positions to Lease Area OCS-A 0534. Similarly, the potential footprint of Phase 1 overlaps with the potential footprint of Phase 2 to account for the range in the number of WTGs that may be developed for Phase 1 (see Figure 3.1-4 of COP Volume I).

The WTG parameters for Phase 1 are provided in Table 2.3-1 and shown on Figure 3.2-1 of COP Volume I. The WTGs will be no lighter than RAL 9010 Pure White and no darker than RAL 7035 Light Grey in color; the Proponent anticipates that the WTGs will be painted off-white/light grey to reduce their visibility against the horizon. The WTGs will include one or two levels of red flashing aviation obstruction lights in accordance with Federal Aviation Administration (FAA) and/or BOEM requirements. The Proponent expects to use an Aircraft Detection Lighting System (ADLS) that automatically activates all aviation obstruction lights when aircraft approach the Phase 1 WTGs, subject to BOEM approval. Each WTG will be maintained as a Private Aid to Navigation (PATON) and will contain marine navigation lighting and marking in accordance with the USCG's PATON marking guidance for offshore wind facilities in First District-area waters.

The WTGs will be installed using jack-up vessels, anchored vessels, or dynamic positioning (DP) vessels along with necessary support vessels and supply vessels. The tower will first be erected followed by the nacelle and finally the hub, inclusive of the blades. Alternatively, the nacelle and hub could be installed in a single operation followed by installation of individual blades.

Table 2.3-1 Phase 1 of New England Wind Design Envelope Summary

Layout and Size of Phase 1	WTGs	WTG Foundations
• 41–62 wind turbine generators (WTGs) installed • One or two electrical service platforms (ESPs) installed • Windfarm layout in E-W & N-S grid pattern with 1 NM (1.85 km) spacing between WTG/ESP positions • Area of Phase 1 SWDA: 150–231 km^2 (37,066–57,081 acres)	• 41–62 WTGs • Maximum rotor diameter of 285 m (935 ft) • Maximum tip height of 357 m (1,171 ft) • Minimum tip clearance of 27 m (89 ft) • Installation with a jack-up vessel, anchored vessel, or dynamic positioning (DP) vessel and components likely supplied by feeder vessels	• Each WTG installed on a monopile or piled jacket foundation • Scour protection may be used around all foundations • Maximum pile driving energy of 6,000 kJ for monopiles and 3,500 kJ for jackets • Installation with a jack-up vessel, anchored vessel, or DP vessel and components potentially supplied by feeder vessels
ESPs (Topside and Foundation)	**Inter-Array & Inter-Link Cables**	**Offshore Export Cables**
• One or two ESP(s) • Each ESP installed on a monopile or jacket foundation (ESPs installed on monopiles may be co-located) • Maximum pile driving energy of 6,000 kJ for monopiles and 3,500 kJ for jackets • Scour protection may be installed around the foundations • Installation with a jack-up vessel, anchored vessel, or DP vessel	• 66–132 kV inter-array cables buried beneath the seafloor at a target depth of 1.5–2.5 m (5–8 ft) • Maximum total inter-array cable length of ~225 km (~121 NM) • Up to one 66–275 kV inter-link cable buried at a target depth of 1.5–2.5 m (5–8 ft) • Maximum total inter-link cable length of ~20 km (~11 NM) • Example layout identified, not finalized • Pre-lay grapnel run and pre-lay survey • Typical installation techniques include jetting (e.g. jet plow or jet trenching) and mechanical plow • Use of cable protection (rock, gabion rock bags, concrete mattresses, half-shell pipes [or similar]) on areas of minimal cable burial	• Two 220–275 kV offshore export cables buried beneath the seafloor at a target depth of 1.5–2.5 m (5–8 ft) • Maximum total offshore export cable length of ~202 km (~109 NM) • Cables installed in one Offshore Export Cable Corridor • Pre-lay grapnel run, pre-lay survey, and possibly boulder clearance • Typical installation techniques include jetting (e.g. jet plow or jet trenching) and mechanical plow, possibly with dredging in some locations to achieve burial depth • Use of cable protection (rock, gabion rock bags, concrete mattresses, half-shell pipes [or similar]) on areas of minimal cable burial

Note: Elevations are relative to Mean Lower Low Water (MLLW).

2.3.1.2 Wind Turbine Generator Foundations

At this time, the Proponent expects to use all monopiles for the Phase 1 WTG foundations. However, a combination of monopiles and/or piled jackets may be used, pending the outcome of a foundation feasibility analysis. The monopiles will have a maximum diameter of 12 m (39 ft) and will be driven into the seabed to a maximum penetration depth of 55 m (180 ft). The Envelope of dimensions for each Phase 1 WTG foundation type are shown on Figures 3.2-2 and 3.2-3 of COP Volume I. Scour protection consisting of rock material will be used for the larger diameter monopiles but may or may not be needed for the smaller diameter piles used for jacket foundations.

The foundations are expected to be installed by one or two DP, anchored, or jack-up vessels, along with necessary support vessels and supply vessels. Pile driving would begin with a "soft-start" (i.e., the hammer energy level will be gradually increased) to ensure the pile remains vertical and allow any motile marine life to leave the area before pile driving intensity is increased. It is anticipated that a maximum of two monopiles or one complete piled jacket (3–4 piles) can be driven into the seabed per day.

2.3.1.3 Electrical Service Platforms

One or two ESP(s) will serve as the common interconnection point(s) for the Phase 1 WTGs. The ESP(s) will be supported by either a monopile or piled jacket foundation (with 3–12 piles) that may be surrounded by scour protection, if needed. If two ESPs are used, they may be located at two separate positions or co-located at one of the potential ESP positions shown on Figure 3.1-4 of COP Volume I (co-located ESPs would be smaller structures installed on monopile foundations). The approximate size and design of the ESP topside and foundation are depicted in Figures 3.2-6 and 3.2-7 of COP Volume I. If necessary, the ESP(s) will include an aviation obstruction lighting system in compliance with FAA and/or BOEM requirements, which would be activated by ADLS, subject to BOEM approval. The ESP(s) will include marine navigation lighting and marking similar to the lighting and marking described for the WTGs. ESP foundation and topside installation may be performed by a DP, anchored, or jack-up vessel. ESP foundation installation is similar to WTG foundation installation described above. Following topside installation, the ESP(s) will be commissioned.

2.3.1.4 Offshore Export Cables

Phase 1 includes two offshore export cables, which will transmit electricity from the Phase 1 ESP(s) to the selected landfall site. Each offshore export cable is expected to be comprised of a three-core 220–275 kV high voltage alternating current (HVAC) cable and one or more fiber optic cables. Between the Phase 1 ESP(s) and the northwestern corner of the SWDA, the offshore export cables may be installed in any area of the SWDA. From the northwestern corner of the SWDA, the Phase 1 offshore export cables will be installed within the OECC to reach either the Craigville Public Beach Landfall Site or the Covell's Beach Landfall Site (see Figure 3.1-6 of COP Volume I). The maximum length of offshore export cables (assuming two cables) is ~202 km (~109 NM).

Prior to cable laying, a pre-lay grapnel run, and pre-lay survey will be performed to clear obstructions and inspect the route. Large boulders along the route may need to be relocated and some dredging of the upper portions of sand waves may be required prior to cable laying to achieve sufficient burial depth below the stable sea bottom. Each offshore export cable will be installed beneath the seafloor at a target depth of 1.5–2.5 m (5–8 ft). Offshore export cable laying is expected to be performed primarily via simultaneous lay and bury using jetting techniques or mechanical plow. However, other specialty techniques may be used in certain areas to ensure sufficient burial depth (see Section 3.3.1.3.6 of COP Volume I). To facilitate cable installation, anchored vessels may be used along the entire length of the offshore export cables. While the Proponent intends to avoid or minimize the need for cable protection to the greatest extent feasible, the Proponent conservatively estimates that approximately 6% of the offshore export cables within the OECC could require cable protection (or up to 7% of the offshore export cables within the OECC for both Phases if the Western Muskeget Variant is used for one or two Phase 2 export cables).

2.3.1.5 Inter-Array and Inter-Link Cables

Strings of multiple WTGs will be connected to the Phase 1 ESP(s) via 66–132 kV inter-array cables. The maximum anticipated length of the Phase 1 inter-array cables is approximately 225 km (121 NM). In addition, if two ESPs are used, the ESPs may be connected together by an up to ~20 km (~11 NM) long 66–275 kV inter-link cable. The Phase 1 inter-array and inter-link cable layout will be designed and optimized during the final design of Phase 1.

The inter-array and inter-link cables will be buried beneath the seafloor at a target depth of 1.5–2.5 m (5–8 ft), likely using jetting techniques. However, in some cases, a mechanical plow may be better suited to certain site-specific conditions and other specialty techniques may be used more rarely. The Proponent conservatively estimates that up to 2% of the total length of the inter-array and inter-link cables could require cable protection.

2.3.1.6 Landfall Site and Onshore Export Cables

The offshore export cables will make landfall within paved parking areas at either the Craigville Public Beach Landfall Site or the Covell's Beach Landfall Site in the Town of Barnstable. The ocean to land transition at either landfall sites will be made using horizontal directional drilling (HDD), which will avoid or minimize impacts to the beach, intertidal zone, and nearshore areas and achieve a burial significantly deeper than any expected erosion. From the landfall site, the onshore export cables would follow one of two approximately 6.5-10.5 km (4.0-6.5 mi) potential Onshore Export Cable Routes (with variants) in the Town of Barnstable to the new onshore substation (see Figure 3.2-11 of COP Volume I).

The onshore export cables will be primarily installed in an underground duct bank (i.e., an array of plastic conduits encased in concrete) along the selected Onshore Export Cable Route; the duct bank will typically be within public roadway layouts although portions of the duct bank may be within existing utility rights-of-way (ROWs).

2.3.1.7 Onshore Substation and Grid Interconnection

Phase 1 will require the construction of a new onshore substation on a 0.027 km^2 (6.7 acre) privately-owned parcel located at 8 Shootflying Hill Road. From the onshore substation, grid interconnection cables will be installed within an underground duct bank along one of two potential Grid Interconnection Routes (with variants) to the grid interconnection point at Eversource's existing West Barnstable Substation. The Proponent may construct an access road to the onshore substation site on 6 Shootflying Hill Road, which is adjacent the onshore substation site. The Proponent may also use an approximately 0.011 km^2 (2.8 acre) parcel of land, assessor map parcel #214-001 ("Parcel #214-001"), located immediately southeast of the West Barnstable Substation for a segment of the grid interconnection cables and/or to house some onshore substation equipment (see Figure 3.1-2 of COP Volume I).

2.3.1.8 Port Facilities

The Proponent has identified several port facilities in Massachusetts, Rhode Island, Connecticut, New York, and New Jersey that may be used for frequent crew transfer, offloading/loading shipments of components, storage, preparing components for installation, and potentially some component fabrication and assembly. In addition, some components, materials, and vessels could come from Canadian and European ports. See Section 3.2.2.5 of COP Volume I for a complete list of possible ports that may be used for major construction staging. It is not expected that all the ports identified would be used; it is more likely that only some ports would be used during construction depending upon final construction logistics planning.

2.3.2 Phase 1 Operations and Maintenance

The Phase 1 WTGs will be designed to operate without attendance by any operators. Continuous monitoring will be conducted remotely using a supervisory control and data acquisition (SCADA) system. Routine preventive maintenance and proactive inspections (e.g. multi-beam echosounder inspections, side scan sonar inspections, magnetometer inspections, depth of burial inspections, etc.) will be performed for all offshore facilities.

To execute daily O&M activities offshore, the Proponent expects to use a service operation vessel (SOV) to provide offshore accommodations and workspace for O&M workers. Daughter craft and/or crew transfer vessels (CTVs) would be used to transfer crew to and from shore. Although less likely, if an SOV is not used, several CTVs and helicopters would be used to frequently transport crew to and from the offshore facilities. In addition to the SOV, CTVs, and/or daughter craft, other larger support vessels (e.g. jack-up vessels) may be used infrequently to perform some routine maintenance and repairs (if needed).

The Proponent expects to use one or more facilities in support of Phase 1 O&M activities. For Phase 1, the Proponent will likely establish a long-term SOV O&M base in Bridgeport, Connecticut. Current plans anticipate that CTVs and/or the SOV's daughter craft would operate out of Vineyard

Haven and/or New Bedford Harbor. Although the Proponent plans to locate the Phase 1 O&M facilities in Bridgeport, New Bedford Harbor, and/or Vineyard Haven, the Proponent may use other ports listed in Table 3.2-8 of COP Volume I to support O&M activities.

2.3.3 Phase 1 Decommissioning

As currently envisioned, the decommissioning process for Phase 1 is essentially the reverse of the installation process. Decommissioning of the offshore facilities is broken down into several steps:

- Retirement in place (if authorized by BOEM) or removal of the offshore cable system (i.e., inter-array, inter-link, and offshore export cables) and any associated cable protection.
- Dismantling and removal of WTGs. Prior to dismantling the WTGs, they would be properly drained of all lubricating fluids and chemicals, which would be brought to port for proper disposal and/or recycling.
- Cutting and removal of foundations and removal of scour protection. In accordance with BOEM's removal standards (30 CFR § 585.910(a)), the foundations would likely be cut at least 4.5 m (15 ft) below the mudline; the portion below the cut will likely remain in place.
- Removal of ESP(s). The ESP(s) and their foundations will be disassembled in a similar manner as the WTGs. Before removing the ESP(s), the offshore export cables, inter-array cables, and inter-link cables would be disconnected.

The onshore facilities could be retired in place or retained for future use. The extent of onshore decommissioning is subject to discussions with the Town of Barnstable on the approach that best meets the Town's needs and has the fewest environmental impacts.

2.4 Phase 2 of New England Wind

Phase 2 of New England Wind, also known as Commonwealth Wind, will deliver power to one or more Northeastern states and/or to other offtake users, including 1,232 MW of power to the ISO-NE electric grid to meet the Proponent's obligations under long-term contracts with Massachusetts electric distribution companies. Phase 2 may be developed as one or more projects. The full build-out of Phase 2 development is largely dependent on market conditions and the advancement of WTG technology. It is likely that a portion of Phase 2 construction could begin immediately following Phase 1[6] with the remainder following by a number of years. The Envelope for Phase 2 of New England Wind is summarized in Table 2.4-1.

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[6] In this scenario, each major construction activity would be sequential for the two Phases (e.g. Phase 2 foundation installation would immediately follow Phase 1 foundation installation). However, there could be some overlap of different offshore activities between Phase 1 and Phase 2 (e.g. Phase 2 foundation installation could occur at the same time as Phase 1 WTG installation). There will be no concurrent/simultaneous pile driving of foundations.

2.4.1 Phase 2 Construction and Installation

2.4.1.1 Wind Turbine Generators

Phase 2 will occupy the remainder of the SWDA that is not developed for Phase 1. As described in Section 2.3.1.1, the potential footprint of Phase 2 within the SWDA overlaps with the potential footprint of Phase 1 to account for the range in the number of WTGs that may be developed for Phase 1 (see Figure 4.1-4 of COP Volume I). Depending on the final footprint of Phase 1, the total number of WTG/ESP positions expected to be available for Phase 2 ranges from 64 to 88. Up to 88 of those positions may be used for WTGs. The Phase 2 WTGs will be oriented in a 1 x 1 NM layout. The WTG parameters for Phase 2 are provided in Table 2.4-1 and shown on Figure 4.2-1 of COP Volume I.

Table 2.4-1 Phase 2 of New England Wind Design Envelope Summary

Layout and Size of Phase 2	WTGs	WTG Foundations
• 64–88 total wind turbine generator (WTG) and electrical service platform (ESP) positions expected to be available ○ Up to 79 WTGs installed ○ Up to 3 ESPs installed • Windfarm layout in E-W & N-S grid pattern with 1 NM (1.85 km) spacing between positions • Area of Phase 2 SWDA: 222–303 km^2 (54,857–74,873 acres)	• Up to 88 WTGs • Maximum rotor diameter of 285 m (935 ft) • Maximum tip height of 357 m (1,171 ft) • Minimum tip clearance of 27 m (89 ft) • Installation likely with a jack-up vessel, anchored vessel, or dynamic positioning (DP) vessel and components potentially supplied by feeder vessels	• Each WTG installed on a monopile, jacket, or bottom-frame foundation • Scour protection may be used around all foundations • Maximum pile driving energy of 6,000 kJ for monopiles and 3,500 kJ for jackets and bottom-frames • Installation likely with a jack-up vessel, anchored vessel, or DP vessel and components potentially supplied by feeder vessels
ESP(s) (Topside and Foundation)	**Inter-Array & Inter-Link Cables**	**Offshore Export Cables**
• Up to 3 ESPs • Each ESP installed on a monopile or jacket foundation (ESPs installed on monopiles may be co-located) • Maximum pile driving energy of 6,000 kJ for monopiles and 3,500 kJ for jackets • Scour protection may be installed around the foundations • Installation likely with a jack-up vessel, anchored vessel, or DP vessel	• 66–132 kV inter-array cables buried beneath the seafloor at a target depth of 1.5–2.5 m (5–8 ft) • Maximum total inter-array cable length of ~325 km (~175 NM) • 66–345 kV inter-link cables buried at a target depth of 1.5–2.5 m (5–8 ft) • Maximum total inter-link cable length of ~60 km (~32 NM) • Example layout identified, not finalized • Pre-lay grapnel run and pre-lay survey • Typical installation techniques include jetting (e.g. jet plow or jet trenching) and mechanical plow • Use of cable protection (rock, gabion rock bags, concrete mattresses, half-shell pipes [or similar]) on areas of minimal cable burial	• Two or three 220–345 kV high voltage alternating current (HVAC) cables buried beneath the seafloor at a target depth of 1.5–2.5 m (5–8 ft) • Cables installed in an Offshore Export Cable Corridor (OECC) with potential variations • Maximum total offshore export cable length of ~356 km (~192 NM) • Pre-lay grapnel run, pre-lay survey, and possibly boulder clearance • Typical installation techniques include jetting (e.g. jet plow or jet trenching) and mechanical plow, possibly with dredging in some locations to achieve burial depth • Use of cable protection (rock, gabion rock bags, concrete mattresses, half-shell pipes [or similar]) on areas of minimal cable burial

Note: Elevations are relative to Mean Lower Low Water (MLLW).

Unless BOEM and FAA guidance is modified before Phase 2 proceeds, the WTGs will be no lighter than RAL 9010 Pure White and no darker than RAL 7035 Light Grey in color; the Proponent anticipates that the WTGs will be painted off-white/light grey to reduce their visibility against the horizon. Unless current guidance is modified by the FAA and BOEM, the WTGs will include one or two levels of red flashing aviation obstruction lights. The Proponent expects to use the same or similar approaches used for Vineyard Wind 1 and/or Phase 1, including the use of an ADLS that is activated automatically by approaching aircraft. Each WTG will be maintained as a PATON and will contain marine navigation lighting and marking in accordance with the USCG's PATON marking guidance for offshore wind facilities in First District-area waters.

The WTGs are expected to be installed using jack-up vessels, anchored vessels, or DP vessels along with necessary support vessels and supply vessels. The tower will first be erected followed by the nacelle and finally the hub, inclusive of the blades. Alternatively, the nacelle and hub could be installed in a single operation followed by installation of individual blades.

2.4.1.2 Wind Turbine Generator Foundations

Commercial and technical considerations at the time Phase 2 is ready to proceed will determine the types of WTG foundations used for Phase 2. Monopiles, jackets (with piles or suction buckets), bottom-frame foundations (with piles or suction buckets), or a combination of those foundation types may be used for Phase 2 pending the outcome of a foundation feasibility analysis.

If used, monopiles would have a maximum diameter of 13 m (43 ft) and would be driven into the seabed to a maximum depth of 55 m (180 ft). The dimensions for each Phase 2 WTG foundation type are shown on Figures 4.2-2 through 4.2-6 of COP Volume I. Scour protection consisting of rock material may be placed around the foundations; it is anticipated that scour protection will be needed for the larger diameter monopiles and suction buckets but may or may not be needed for the smaller diameter piles used for jacket and bottom-frame foundations.

The foundations are expected to be installed by one or two DP, anchored, or jack-up vessels, along with necessary support vessels and supply vessels. Pile driving will begin with a "soft-start" to ensure the pile remains vertical and allow any motile marine life to leave the area before pile driving intensity is increased. It is anticipated that a maximum of two monopiles, one complete piled jacket (3–4 piles), or one complete piled bottom-frame (3 piles) can be driven into the seabed per day. If suction buckets are used, pumps attached to the top of each bucket would pump water and air out of the space between the suction buckets and seafloor, pushing the buckets down into the seafloor.

2.4.1.3 Electrical Service Platforms

Up to three ESP(s) will serve as the common interconnection point(s) for the Phase 2 WTGs. The ESP(s) would be supported by a monopile, piled jacket (with 3–12 piles), or suction bucket jacket foundation, which may be surrounded by scour protection, if needed. If two or three ESPs are used, they may be located at separate positions or two of the ESPs may be co-located at one of the potential ESP positions shown on Figure 4.1-4 of COP Volume I (co-located ESPs would be smaller structures installed on monopile foundations). The approximate size and design of the ESP(s) are depicted in Figures 4.2-10 through 4.2-12 of COP Volume I. The ESP(s) will include an aviation obstruction lighting system in compliance with FAA and/or BOEM requirements in effect at the time Phase 2 proceeds, if necessary. The aviation obstruction lights would be activated by ADLS (or similar), subject to BOEM approval. Marine navigation lighting and marking on each ESP will follow USCG and BOEM regulations and guidance in effect at the time Phase 2 proceeds.

ESP foundation and topside installation may be performed by a DP, anchored, or jack-up vessel. ESP foundation installation is similar to WTG foundation installation described above. Following topside installation, the ESP(s) will be commissioned. As an alternative to installing separate ESP(s) situated on their own foundation(s), the ESP(s) could potentially be integrated onto a WTG foundation, which entails placing ESP equipment on one or more expanded WTG foundation platforms (see Figure 4.2-9 of COP Volume I).

2.4.1.4 Offshore Export Cables

Two or three 220-345 kV HVAC offshore export cable(s) will transmit electricity from the Phase 2 ESP(s) to the selected landfall site(s). Between the Phase 2 ESP(s) and the northwestern corner of the SWDA, the offshore export cables may be installed in any area of the SWDA. The Proponent intends to install all Phase 2 offshore export cables within the OECC that travels from the northwestern corner of the SWDA to the Dowses Beach Landfall Site and/or Wianno Avenue Landfall Site in the Town of Barnstable (see Figure 4.1-6 of COP Volume I). Under this scenario, the maximum length of Phase 2 offshore export cables (assuming three cables) is ~356 km (~192 NM). However, as described further in Section 4.1.3 of COP Volume I, the Proponent has also identified two variations of the Phase 2 OECC in the event that technical, logistical, grid interconnection, or other unforeseen issues arise during the COP review and engineering processes that preclude one or more Phase 2 offshore export cables from being installed within all or a portion of the OECC. As described in Section 4.1.3 of COP Volume I, these variants include the Western Muskeget Variant (located along the western side of Muskeget Channel) and the South Coast Variant (which travels west-northwest from Lease Area OCS-A 0501 to the Massachusetts state waters boundary near Buzzards Bay). The Proponent is reserving the option to install one or two Phase 2 export cables within the Western Muskeget Variant[7] and one or more Phase 2 export cables within the South Coast Variant (see Figure 2.4-1 and Section 4.1.3 of COP Volume I). The Proponent intends to provide additional information on the South Coast Variant in its February 2022 COP Addendum.

Prior to cable laying, a pre-lay grapnel run and pre-lay survey are expected to be performed to clear obstructions and inspect the route. Large boulders along the route may need to be relocated and some dredging of the upper portions of sand waves may be required prior to cable laying to achieve sufficient burial depth below the stable sea bottom. Each offshore export cable will be installed beneath the seafloor at a target depth of 1.5–2.5 m (5–8 ft). Offshore export cable laying is expected to be performed primarily via simultaneous lay and bury using jetting techniques (e.g. jet plow or jet trenching) or mechanical plow. However, other specialty techniques may be used in certain areas to ensure sufficient burial depth (see Section 4.3.1.3.6 of COP Volume I). To facilitate cable installation, anchored vessels may be used along the entire length of the offshore export cables. While the Proponent intends to avoid or minimize the need for cable protection to the greatest extent feasible, the Proponent conservatively estimates that approximately 6% of the Phase 2 offshore export cables within the OECC could require cable protection (or 7-8% of the offshore export cables within the OECC for Phase 2 if the Western Muskeget Variant is used for one or two Phase 2 export cables).

2.4.1.5 Inter-Array and Inter-Link Cables

Strings of multiple WTGs will be connected to the Phase 2 ESP(s) via 66–132 kV inter-array cables. The maximum anticipated length of the Phase 2 inter-array cables is approximately 325 km (175 NM). In addition, the Phase 2 ESPs may be connected to each other (if two or three ESPs are used) or to a Phase 1 ESP by up to two 66–345 kV inter-link cables. The maximum total length of inter-link cables for Phase 2 is ~60 km (~32 NM). The Phase 2 inter-array and inter-link cable layout is highly dependent upon the final number of Phase 2 WTGs and the location and number of ESPs. The design and optimization of the inter-array and inter-link cable system will occur during the final design of Phase 2.

The inter-array and inter-link cables will be buried beneath the seafloor at a target depth of 1.5–2.5 m (5–8 ft). Based on currently available technologies, the inter-array and inter-link cables will likely be installed using jetting techniques. However, in some cases, a mechanical plow may be better suited to certain site-specific conditions and other specialty techniques may be used more rarely. The Proponent conservatively estimates that up to 2% of the total length of the inter-array and inter-link cables could require cable protection.

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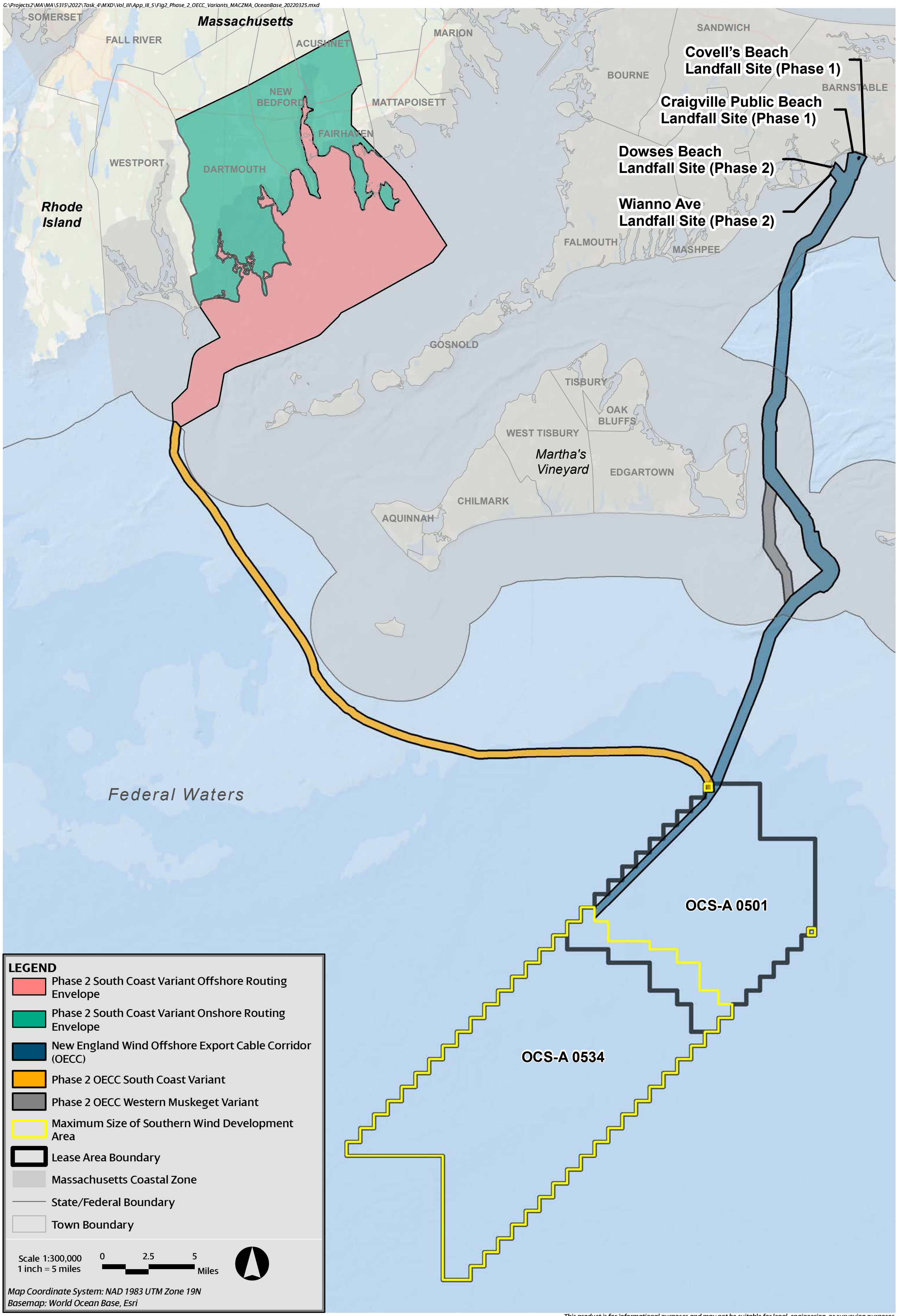
[7] The Western Muskeget Variant is the same exact corridor as the western Muskeget option included in the Vineyard Wind 1 COP and has already been thoroughly reviewed and approved by BOEM as part of that COP.



New England Wind
AVANGRID RENEWABLES

Figure 2.4-1
Phase 2 Offshore Export Cable Corridor Variants

2.4.1.6 Landfall Site(s), Onshore Cable Route(s), Onshore Substation(s), and Grid Interconnection

The Phase 2 offshore export cables will come ashore within paved parking areas at the Dowses Beach Landfall Site and/or Wianno Avenue Landfall Site in Barnstable, unless unforeseen technical, logistical, or grid interconnection issues arise that preclude the Proponent from installing one or more Phase 2 offshore export cables within the OECC and a second grid interconnection point is needed (see Section 4.1.3.3 of COP Volume I). The ocean to land transition at the Dowses Beach Landfall Site will be made using HDD, which will avoid or minimize impacts to the beach, intertidal zone, and nearshore areas and achieve a burial significantly deeper than any expected erosion. HDD or open trenching may be used at the Wianno Avenue Landfall Site.

Upon making landfall, the onshore export cables would follow one or two Onshore Export Cable Routes to one or two new onshore substations. Grid interconnection cables installed along one or two Grid Interconnection Routes would connect the Phase 2 onshore substations to the grid interconnection point at Eversource’s existing 345 kV West Barnstable Substation. The onshore export and grid interconnection cables are expected to be installed underground within public roadway layouts and utility ROWs. From each landfall site to the grid interconnection point, the maximum combined length of the Phase 2 Onshore Export Cable Route and Grid Interconnection Route is up to 17 km (10.6 mi). The properties needed for the Phase 2 onshore substation site(s) have not yet been secured, but the site(s) will be located generally along the potential onshore routes illustrated on Figure 4.1-2 of COP Volume I.

In the event that one or more Phase 2 HVAC offshore export cables deliver power to a second grid interconnection point, Phase 2 could include one onshore transmission system in Barnstable (using either the Dowses Beach Landfall Site or Wianno Avenue Landfall Site) and/or an onshore transmission system(s) in proximity to the alternative grid interconnection point. See Section 4.1.1 of COP Volume I for additional details.

2.4.1.7 Port Facilities

The Proponent has identified several port facilities in Massachusetts, Rhode Island, Connecticut, New York, and New Jersey that may be used for frequent crew transfer, offloading/loading shipments of components, storage, preparing components for installation, and potentially some component fabrication and assembly. In addition, some components, materials, and vessels could come from Canadian and European ports. See Section 4.2.2.5 of COP Volume I for a complete list of possible ports that may be used for major Phase 2 construction staging activities. It is not expected that all the ports identified would be used; it is more likely that only some ports would be used during construction depending upon final construction logistics planning.

2.4.2 Phase 2 Operations and Maintenance

The Phase 2 WTGs will be designed to operate without attendance by any operators. Continuous monitoring is typically conducted remotely using a SCADA system. Routine preventive maintenance and proactive inspections (e.g. multi-beam echosounder inspections, side scan sonar inspections, magnetometer inspections, depth of burial inspections, etc.) will be performed for all offshore facilities.

Once Phase 2 becomes operational, the Proponent expects to use a SOV to provide offshore accommodations and workspace for O&M workers. Under this scenario, daughter craft and/or CTVs would be used to transfer crew to and from shore. If an SOV or similar accommodation vessel is not used, several CTVs and helicopters could be used to frequently transport crew to and from the offshore facilities. In addition to the SOV, CTVs, and/or daughter craft, other larger support vessels (e.g. jack-up vessels) may be used infrequently to perform some routine maintenance and repairs (if needed).

In support of O&M activities for Phase 2, the Proponent will likely use O&M facilities in Bridgeport, Vineyard Haven, and/or New Bedford Harbor. The O&M facilities may include management and administrative team offices, a control room, office and training space for technicians and engineers, warehouse space for parts and tools, and/or pier space for vessels used during O&M. The Proponent may use any of the ports listed in Table 4.2-8 of COP Volume I to support O&M activities.

2.4.3 Phase 2 Decommissioning

As currently envisioned, the decommissioning process for Phase 2 is essentially the reverse of the installation process. Decommissioning of the offshore facilities is broken down into several steps:

- Retirement in place (if authorized by BOEM) or removal of the offshore cable system (i.e., inter-array, inter-link, and offshore export cables) and any associated cable protection.
- Dismantling and removal of WTGs. Prior to dismantling the WTGs, they would be properly drained of all lubricating fluids and chemicals, which would be brought to port for proper disposal and/or recycling.
- Cutting and removal of foundations and removal of scour protection. In accordance with BOEM's removal standards (30 CFR § 585.910(a)), the foundations would likely be cut at least 4.5 m (15 ft) below the mudline; the portion below the cut will likely remain in place. Suction buckets (if used) are anticipated to be removed by injecting water into the space between the suction bucket and seafloor to reduce the suction pressure that holds the foundation in place.
- Removal of ESP(s). The ESP(s), and their foundations are expected to be disassembled in a similar manner as the WTGs. Before removing the ESP(s), the offshore export cables, inter-array cables, and inter-link cables would be disconnected.

The onshore facilities could be retired in place or retained for future use. The extent of onshore decommissioning is subject to discussions with the Town of Barnstable on the approach that best meets the Town's needs and has the fewest environmental impacts.

3.0 NEW ENGLAND WIND CONSISTENCY WITH MASSACHUSETTS ENFORCEABLE POLICIES

3.1 Jurisdiction for Federal Consistency Certification

Section 307(c)(3)(B) of the federal Coastal Zone Management Act (CZMA), as amended, requires any applicant who submits an Outer Continental Shelf (OCS) plan[8] to the Department of the Interior to also provide a certification that each activity described in the OCS plan affecting any land or water use or natural resource of a state's coastal zone complies with the enforceable policies of that state's approved coastal management program and will be carried out in a manner consistent with such program (see 16 U.S.C. § 1456(c)(3)(B)). On July 2, 2020, the Proponent submitted an OCS plan— the New England Wind COP— to the Department of Interior's Bureau of Ocean Energy Management for approval. Thus, the portions of New England Wind, both within and outside of the Massachusetts coastal zone, that have reasonably foreseeable effects on the coastal zone's uses and natural resources are subject to federal consistency review by MA CZM under 15 CFR Part 930, Subparts D and E (see Figure 1).

The official Massachusetts coastal zone includes the lands and waters within an area defined by the seaward limit of the state's territorial sea, extending from the Massachusetts-New Hampshire border south to the Massachusetts-Rhode Island border, and landward to 100 feet inland of specified major roads, rail lines, other visible rights-of-way, or in the absence these, at the coordinates specified by MA CZM. The coastal zone includes all of Cape Cod, Nantucket, Martha's Vineyard, and the Elizabeth Islands. As such, the portions of New England Wind within the Massachusetts coastal zone include the segment of the OECC within state waters, the landfall sites, the Onshore Export Cable Routes, the onshore substations, and the Grid Interconnection Routes. The offshore WTGs, ESPs, their foundations, inter-array cables, inter-link cables, and the remainder of the OECC are located in federal waters outside the Massachusetts coastal zone (see Figure 1.0-1). However, the Proponent has voluntarily agreed to having CZM's federal consistency review address the portions of New England Wind (both Phases 1 and 2) in federal waters as well as within the Massachusetts coastal zone.

[8] *OCS plan* means "any plan for the exploration or development of, or production from, any area which has been leased under the Outer Continental Shelf Lands Act (43 U.S.C. 1331 et seq.), and the regulations under that Act, which is submitted to the Secretary of the Interior or designee following management program approval and which describes in detail federal license or permit activities." The New England Wind Construction and Operations Plan submitted to BOEM is an OCS plan.

3.2 Consistency with MA CZM Enforceable Policies

The following sections demonstrate New England Wind's compliance with the enforceable policies of the Massachusetts Coastal Program as set forth in the 2011 MA CZM Policy Guide. The sections below rely on detailed information provided in the New England Wind COP. The New England Wind COP will be provided to MA CZM following BOEM's completeness and sufficiency review and is incorporated by reference.

Coastal Hazards

Coastal Hazard Policy #1

Preserve, protect, restore, and enhance the beneficial functions of storm damage prevention and flood control provided by natural coastal landforms, such as dunes, beaches, barrier beaches, coastal banks, land subject to coastal storm flowage, salt marshes, and land under the ocean.

The coastal wetland resource areas located in and near the New England Wind landfall sites for both Phase 1 and Phase 2 include dunes, beaches, salt marsh, land subject to coastal storm flowage, and land under the ocean, as well as barrier beach (for the Dowses Beach Landfall Site only). These wetland resource areas are generally not degraded and provide the beneficial functions that are protected interests of the Massachusetts Wetlands Protection Act (WPA). Through careful route selection, compliance with the municipal Conservation Commission's Order of Conditions (once issued), and proper use of construction techniques such as HDD and other trenchless crossings where appropriate, Phase 1 and Phase 2 will avoid potential wetlands impacts to the maximum extent practicable and will minimize and mitigate unavoidable impacts.

All proposed landfall sites for Phase 1 (Craigville Public Beach or Covell's Beach) and Phase 2 (Dowses Beach and/or Wianno Avenue) are located within paved parking lots. At the Phase 1 landfall site (either Craigville Public Beach or Covell's Beach), HDD is proposed to accomplish the offshore-to-onshore transition. This will avoid impacts to the most sensitive resource areas along and near the shoreline. At the Phase 2 landfall site (either Dowses Beach and/or Wianno Avenue), HDD is expected to be used, though open trenching may also be used during Phase 2 if it is not feasible to use the Dowses Beach Landfall Site and open trenching is needed at the Wianno Avenue Landfall Site.

While some work in the paved parking lots of either Phase 1 landfall site may be located within 100 feet of coastal dune, Phase 1 will have no impacts to coastal dune itself except perhaps a very narrow strip of dune located between the paved Craigville Beach parking lot and Craigville Beach Road; the duct bank route may need to cross through this narrow strip, in which case the dune would be fully restored following burial of the duct bank. Similarly, Phase 1 will have no direct impacts to coastal beach, with the only impacts to the beach system being within and beneath paved roadways. In addition, Phase 1 will cross the Centerville River and several crossing methods are under consideration. Trenchless crossing alternatives would avoid any direct impacts to the tidal river or salt marsh and will be used if feasible. The parallel utility bridge option would have some direct impacts, but all disturbed areas would be restored upon completion of construction.

One of the Phase 2 landfall sites (Dowses Beach) is located on a barrier beach and some work in the paved parking lot may be located near coastal dune and salt marsh. (The Wianno Avenue Landfall Site is not located on a barrier beach and does not include coastal dune or salt marsh.) From Dowses Beach, the onshore export cables would either continue beneath public roadway layouts or, using a trenchless crossing, travel beneath East Bay to one of two potential locations on East Bay Road. Phase 2 will have no impacts to coastal dune or salt marsh due to the planned use of HDD for the offshore-to-onshore transition at the Dowses Beach Landfall Site and the planned use of a trenchless crossing beneath Easy Bay (if required). Likewise, while Coastal Beach is present at or near both Phase 2 landfall sites, no direct impacts are expected to Coastal Beach at the Dowses Beach Landfall Site since all HDD activities will be staged from a paved parking lot. The Wianno Avenue Landfall Site is less suited for HDD than open trenching due to the elevated onshore topography and slope of the parking lot. This landfall site is suitable for open trenching because the coastal beach has already been altered by the installation of a riprap seawall, a portion of which would be temporarily removed and replaced following cable installation. The Proponent only expects to use the Wianno Avenue Landfall Site if unforeseen challenges arise that make it infeasible to use the Dowses Beach Landfall Site to accommodate all or some of the Phase 2 offshore export cables. Any disturbed areas of Coastal Beach would be restored following construction.

The Phase 1 and Phase 2 onshore routes will require some work within wetland resource areas, principally land subject to coastal storm flowage (LSCSF). No significant changes to topography are proposed within LSCSF. Further, no above-ground structures are proposed except for the Centerville River crossing for Phase 1, where a parallel utility bridge may be constructed (see Section 3.3.1.10.2 of COP Volume I). As noted previously, construction footprints will be returned to pre-existing grade following installation. Therefore, New England Wind will have no effect on flood velocities or floodplain storage capacity.

For both Phases, the offshore export cables will each be buried within the OECC in Land Under the Ocean. As described in Section 3.3.1.3.6 of COP Volume I, impacts from cable installation are expected to include an up to 1 m (3.3 ft) wide cable installation trench and an up to 3 m (10 ft) wide temporary disturbance zone from the skids/tracks of the cable installation equipment that will slide over the surface of the seafloor (each skid/track is assumed to be approximately 1.5 m [5 ft] wide). Following installation, marine sediments will naturally settle and fill the trench. Limited dredging of the tops of mobile sand waves may also be required in certain locations. Nonetheless, New England Wind activities along the OECC in Land Under the Ocean are not expected to alter existing bathymetry in a way that would result in any significant or long-term changes to hydrodynamics.

Coastal Hazard Policy #2

Ensure construction in water bodies and contiguous land areas will minimize interference with water circulation and sediment transport. Flood or erosion control projects must demonstrate no significant adverse effects on the project site or adjacent or downcoast areas.

New England Wind will not adversely interfere with water circulation or sediment transport because it will not significantly alter the morphology or composition of the seafloor or coastal wetland resource areas. As noted above, the offshore-to-onshore transition is expected to be made using HDD for Phase 1 and Phase 2, though open trenching may also be used during Phase 2 if it is not feasible to use the Dowses Beach Landfall Site and open trenching is needed at the Wianno Avenue Landfall Site. The export cables have a target burial depth of 1.5–2.5 m (5–8 ft) below the seafloor.

Any dredging performed for New England Wind will be discontinuous and limited to the tops of sand wave features where it may be necessary to remove material to achieve sufficient cable burial within the stable seabed. These existing sand waves are in high-energy areas where morphological changes occur constantly; therefore, any bathymetric changes due to dredging are expected to be temporary.

Coastal Hazard Policy #3

Ensure that state and federally funded public works projects proposed for locations within the coastal zone will: (1) not exacerbate existing hazards or damage natural buffers or other natural resources; (2) be reasonably safe from flood and erosion related damage; (3) not promote growth and development in hazard-prone or buffer areas, especially in velocity zones and Areas of Critical Environmental Concern; and (4) not be used on Coastal Barrier Resource Units for new or substantial reconstruction of structures in a manner inconsistent with the Coastal Barrier Resource/Improvements Acts.

New England Wind is not a state or federally funded public works project; therefore, this policy does not apply.

Coastal Hazard Policy #4

Prioritize public funds for acquisition of hazardous coastal areas for conservation or recreation use, and relocation of structures out of coastal high hazard areas, giving due consideration to the effects of coastal hazards at the location to the use and manageability of the area.

New England Wind does not involve public funds, and therefore this policy does not apply.

Energy

Energy Policy #1

For coastally dependent energy facilities, consider siting in alternative coastal locations. For non-coastally dependent energy facilities, consider siting in areas outside of the coastal zone. Weigh the environmental and safety impacts of locating proposed energy facilities at alternative sites.

Large-scale offshore wind energy generation, and the transmission of that energy to shore, is by nature a coastally dependent energy facility. Accordingly, New England Wind is coastally dependent, since it is necessary to bring the energy generated offshore to an interconnection point onshore. In its analysis of routing alternatives, the Proponent considered and evaluated numerous potential landfall sites and offshore routes for New England Wind before selecting the proposed OECC (see Section 2.4 and Appendix I-G of COP Volume I). As previously noted, New England Wind's offshore renewable wind energy facilities are within the offshore MA WEA in federal waters of the OCS, an area designated by BOEM for offshore wind development due in large part to its distance from coastal locations.

Energy Policy #2

Encourage energy conservation and the use of alternative sources such as solar and wind power in order to assist in meeting the energy needs of the Commonwealth.

New England Wind Phase 1 will deliver power to one or more Northeastern states and/or to other offtake users, including but not limited to 804 MW of power to the ISO-NE electric grid. Phase 2 will deliver power to one or more Northeastern states and/or to other offtake users, including 1,232 MW of power to the ISO-NE electric grid to meet the Proponent's obligations under long-term contracts with Massachusetts electric distribution companies. The purpose of this is to assist in meeting renewable energy targets, to enhance energy security by increasing the reliability and diversity of the energy supply, to reduce greenhouse gas emissions, and to achieve significant health and environmental benefits.

Growth Management

Growth Management Policy #1

Encourage sustainable development that is consistent with state, regional, and local plans and supports the quality and character of the community.

As described above, New England Wind is a sustainable development of renewable energy and is consistent with the goals of Massachusetts' Global Warming Solutions Act (GWSA). New England Wind is located in the MA WEA, which was identified by BOEM as suitable for offshore wind energy development and sited far from shore to minimize visual impacts. Within the SWDA, the closest WTG is approximately 34 km (21 mi) off the coast of Martha's Vineyard (Squibnocket Point) and 40 km (25 mi) off the coast of Nantucket (Madaket). A Visual Impacts Assessment for New England Wind has been prepared and is included as Appendix III-H.a.

All offshore cables will be submerged and will not be visible. The Phase 1 onshore export cables and grid interconnection cables will be installed entirely underground and will not be visible, except for except for at-grade manhole covers and possibly at the Phase 1 Centerville River crossing. The Phase 2 onshore cables are also expected to be installed underground. New onshore substations will be constructed in the Town of Barnstable. The Phase 1 onshore substation will include vegetated screening (see Section 3.2.2.3 of COP Volume I). The need for vegetative or other screening will be determined for the Phase 2 substation once the site is selected.

Growth Management Policy #2

Ensure that state and federally funded infrastructure projects in the coastal zone primarily serve existing developed areas, assigning highest priority to projects that meet the needs of urban and community development centers.

New England Wind involves private development of wind energy generation; therefore, this policy does not apply.

Growth Management Policy #3

Encourage the revitalization and enhancement of existing development centers in the coastal zone through technical assistance and federal and state financial support for residential, commercial, and industrial development.

New England Wind consists of two or more privately financed projects, which will bring substantial economic benefits to the region. Phase 1, also known as Park City Wind, will deliver power to one or more Northeastern states and/or other offtake users, including but not limited to 804 MW of clean, renewable power to the ISO-NE electric grid, thus improving the reliability of the New England's energy mix. Phase 2 will deliver clean, renewable energy to one or more Northeastern states and/or to other offtake users, including 1,232 MW of power to the ISO-NE electric grid to meet the Proponent's obligations under long-term contracts with Massachusetts electric distribution companies. The Proponent has committed to providing substantive technical assistance in the form of workforce training and job opportunities in existing development centers in the coastal zone to support Phases 1 and 2. The Proponent will continue to work cooperatively with southeastern Massachusetts educational institutions, such as the Massachusetts Maritime Academy, University of Massachusetts Dartmouth, Bristol Community College, Cape Cod Community College and others to maintain and further evolve training and educational opportunities for their students and faculty throughout each Phase of New England Wind (see Section 7.1.2.1 of COP Volume III).

Unless technical, logistical, grid interconnection, or other unforeseen issues arise, both Phases will make landfall within the Town of Barnstable. A Host Community Agreement (HCA) with the Town of Barnstable was executed on May 6, 2022, which provides funding to the Town to offset potential impacts associated with hosting the onshore facilities for Park City Wind. See Section 4.1.2 of COP Volume III for additional details.

Both Phases will use regional port facilities for frequent crew transfer, offloading/loading shipments of components, storing components, and possibly some component fabrication and assembly, thus generating local employment and spurring others to perform related infrastructure improvements, as needed. These activities will help revitalize existing ports. See Sections 3.2.2.5 and 4.2.2.5 of COP Volume I for addition information related to port usage.

Additional information related to the revitalization and enhancement of existing infrastructure is presented in Section 7.1 (Demographics, Employment, and Economics); Section 7.2 (Environmental Justice Assessment); Section 7.6 (Commercial Fisheries and For-Hire Recreational Fishing); Section 7.7 (Land Use and Coastal Infrastructure); and Appendix III-O (Community and Environmental Benefits) of COP Volume III.

Habitat

Habitat Policy #1

Protect coastal, estuarine, and marine habitats – including salt marshes, shellfish beds, submerged aquatic vegetation, dunes, beaches, barrier beaches, banks, salt ponds, eelgrass beds, tidal flats, rocky shores, bays, sounds, and other ocean habitats – and coastal freshwater streams, ponds, and wetlands to preserve critical wildlife habitat and other important functions and services including nutrient and sediment attenuation, wave and storm damage protection, and landform movement and processes.

As described below, New England Wind is designed to avoid impacts to marine, coastal, and wetland habitats to the maximum extent practicable and to minimize and mitigate unavoidable impacts in accordance with applicable federal, state, and local regulations.

Coastal, Estuarine, and Marine Habitats

The Proponent has conducted an extensive analysis of coastal habitats that may be impacted by New England Wind. Section 6.4 of COP Volume III describes the habitats within the Commonwealth of Massachusetts' coastal zone that are located around the New England Wind landfall sites and within the portion of the OECC in State waters (including the Western Muskeget Variant). Section 6.5 (Benthic Resources) of COP Volume III and Appendix III-F (Essential Fish Habitat) provide a thorough analysis of New England Wind's potential impacts to benthic habitat as well as measures to mitigate those impacts. Section 6.6 of COP Volume III contains an extensive discussion of fish and invertebrate species within the Offshore Development Area. Popular and other important areas to commercial and recreational fisheries are discussed in Sections 7.5 and 7.6 of COP Volume III.

The Proponent has conducted surveys of epifauna and infauna along the OECC using underwater video transects and sediment grab samples, respectively. Soft Bottom habitats are the most common along the OECC and make up approximately 59% of the entire corridor. These areas typically contain a sandy surficial layer that is either highly mobile and comprised of migrating bedforms or flat and stable, mostly void of active sediment transport features. Several locations within Massachusetts waters (i.e. primarily within Muskeget Channel, including the Western Muskeget Variant) contained coarse deposits and hard bottom habitats consisting of pebble-cobble habitat with sulfur sponge (*Cliona celata*) communities. See COP Volume II for a comprehensive analysis of the data collected during geophysical and geotechnical surveys conducted for New England Wind. Section 5.2 of COP Volume II describes how benthic habitats have been classified according to the Coastal and Marine Ecological Classification Standard (CMECS) modified by National Marine Fisheries Service (NMFS) (2021).

The Proponent has routed the proposed OECC to avoid and minimize impacts to sensitive habitats where feasible. The preliminary routing of the Phase 1 and Phase 2 cables has avoided sensitive habitats including eelgrass, hard bottom, and complex bottom (i.e., sand waves) where feasible, but avoidance of all sensitive habitats is not always possible. A single eelgrass bed has been identified within the OECC. Video transects and a diver survey delineated a patch of eelgrass offshore that is co-located within the OECC and associated with an area of hard bottom (a rock pile) known as Spindle Rock (see Figure 6.4-1 of COP Volume III). Patches of grass intertwined with macroalgae inhabit the discontinuous sandy bottom in and around the rock pile. It is expected that the identified eelgrass resources near Spindle Rock in proximity to the landfall sites will be avoided. It is also expected that isolated areas of hard bottom may be avoided, such as at Spindle Rock; however, in areas such as Muskeget Channel where hard bottom extends across the entire corridor, it will not be possible to avoid hard bottom (see Section 3.3.4.2 below for further discussion of potential impacts from cable installation).

The Phase 2 landfall sites have similarly been surveyed to identify any sensitive nearshore habitats. As described in Section 5.2.3 of COP Volume II, a patch of eelgrass was found to the southwest, outside the OECC landfall area of Dowses Beach, at the very end of a video transect. This may indicate the edge of a bed that extends to the southwest or inshore, but does not occur within the OECC.

For each Phase, prior to the start of construction, contractors will be provided with a map of sensitive habitats to allow them to plan their mooring positions accordingly. Vessel anchors and legs will be required to avoid known eelgrass beds and will also be required to avoid other sensitive seafloor habitats (hard/complex bottom) as long as such avoidance does not compromise the vessel's safety or the cable's installation. Where it is considered impossible or impracticable to avoid a sensitive seafloor habitat when anchoring, use of mid-line anchor buoys will be considered, where feasible and considered safe, as a potential measure to reduce and minimize potential impacts from anchor line sweep. Such sensitive habitats are largely absent from the SWDA and are primarily located within portions of the OECC.

Based on information provided by MA Division of Marine Fisheries (DMF), local shellfish constables, commercial fishermen, maps, and studies, the OECC will transverse over suitable shellfish habitat for Atlantic surf clam, blue mussel (*Mytilus edulis*), bay scallop (*Argopecten irradians*), and quahog (*Mercenaria mercenaria*) (NEODP 2021). It has also been reported that species of large gastropod whelks (*Busycon carica* and *Busycotypus canaliculatum*) are abundant in Nantucket Sound coastal waters (Davis and Sisson 1988; USDOE MMS 2009). Impacts to shellfish would result primarily from direct disturbance to the seafloor within the footprint of cable installation activities, as well as temporary sediment suspension and deposition during cable installation and dredging (if required). Shellfish in the direct path of the 1 m (3 ft) wide cable installation trench, the 3 m (10 ft) wide disturbance zone from the cable installation equipment's skids/tracks, areas of dredging (if required), anchors, and vessel legs would also experience direct mortality or injury. Burial and mortality of some shellfish may occur where sediment deposition exceeds 20 mm (0.8 in). Sediment dispersion modeling results indicate that lethal deposition levels are not expected from cable installation activities and are only expected from dredging and dumping in small, localized areas along the OECC extending up to 900 m (0.49 NM) from the route centerline. Modeling showed that suspended sediments from dredging and cable installation activities within the OECC (including the Western Muskeget Variant) settle out of suspension within three to six hours, which is well below lethal thresholds (see Appendix III-A of COP Volume III and Sections 6.5 and 6.6 of COP Volume III).

To assess impacts to marine and coastal benthic habitat, the Proponent is committed to developing an appropriate benthic monitoring framework for New England Wind, should it be necessary, in consultation with BOEM and other agencies as appropriate (see Section 3.3.3). See Appendix III-U for the draft framework.

<u>*Coastal Freshwater Streams, Ponds, and Wetlands*</u>

Wetlands impacts along the Phase 1 and Phase 2 onshore routes will largely be limited to LSCSF, riverfront area (RFA), and paved areas within the beach system. Additionally, Variant 2 of the Phase 1 Oak Street Onshore Export Cable Route may affect bordering vegetated wetland (BVW), but a trenchless crossing would likely be used to avoid any impact if that variant is used. The Phase 1 Onshore Export Cable Route from the landfall site to the onshore substation site will cross the Centerville River; the parallel utility bridge option would have some direct impacts within and adjacent to the river, but the trenchless crossing options would avoid any direct impacts to the river. The Phase 2 onshore cables may traverse wetlands or waterbodies, depending on the final Onshore Export Cable Route(s) and Grid Interconnection Route(s) selected. Specialty trenchless crossing methods are expected to be used if the Phase 2 Onshore Export Cable Route(s) and Grid Interconnection Route(s) traverse wetlands or waterbodies in order to avoid impacts to those features.

To protect wetlands and waterways, it is expected that nearly all vehicle fueling, and all major equipment maintenance, will be performed offsite at commercial service stations or a contractor's yard. Field refueling will not be performed within 30 meters (m) (100 feet [ft]) of wetlands or waterways, within 30 m (100 ft) of known private or community potable wells, or within any Town of Barnstable water supply Zone I area. Proper spill containment gear and absorption materials will be maintained for immediate use in the event of any inadvertent spills or leaks.

No changes to topography are proposed within LSCSF, except the limited permanent footprint of the utility bridge abutments for the Centerville River crossing (if used for Phase 1). Further, no above-ground structures are proposed except for the Centerville River crossing, where a parallel utility bridge may be constructed (see Section 3.3.1.10.2 of COP Volume I). Phase 1 and Phase 2 will have no effect on flood velocities or floodplain storage capacity. Further, New England Wind will protect wetland interests by complying with all performance standards identified in the Massachusetts WPA and the terms and conditions of the applicable municipal Conservation Commissions. Further detail can be found in Section 6.1 of COP Volume III.

Habitat Policy #2

Advance the restoration of degraded or former habitats in coastal and marine areas.

As noted above, the coastal and marine resource areas located in and near New England Wind are generally not degraded and provide the beneficial functions that are protected interests of the Massachusetts WPA. As described under Habitat Policy #1, New England Wind is designed to avoid impacts to wetland resource areas to the maximum extent practicable and to minimize and mitigate unavoidable impacts in accordance with applicable federal, state, and local regulations. Through careful route selection and the use of proper construction techniques such as HDD and other trenchless crossings, New England Wind will not permanently degrade any wetland resource areas.

Ocean Resources

Ocean Resources Policy #1

Support the development of sustainable aquaculture, both for commercial and enhancement (public shellfish stocking) purposes. Ensure that the review process regulating aquaculture facility sites (and access routes to those areas) protects significant ecological resources (salt marshes, dunes, beaches, barrier beaches, and salt ponds) and minimizes adverse effects on the coastal and marine environment and other water-dependent uses.

New England Wind is not an aquaculture project; therefore, this policy does not apply.

Ocean Resources Policy #2

Except where such activity is prohibited by the Ocean Sanctuaries Act, the Massachusetts Ocean Management Plan, or other applicable provision of law, the extraction of oil, natural gas, or marine minerals (other than sand and gravel) in or affecting the coastal zone must protect marine resources, marine water quality, fisheries, and navigational, recreational, and other uses.

New England Wind does not involve extracting oil, natural gas, or marine minerals; therefore, this policy does not apply.

Ocean Resources Policy #3

Accommodate offshore sand and gravel extraction needs in areas and in ways that will not adversely affect marine resources, navigation, or shoreline areas due to alteration of wave direction and dynamics. Extraction of sand and gravel, when and where permitted, will be primarily for the purpose of beach nourishment or shoreline stabilization.

New England Wind does not involve offshore sand and gravel extraction; therefore, this policy does not apply.

Port and Harbors

Ports and Harbors Policy #1

Ensure that dredging and disposal of dredged material minimize adverse effects on water quality, physical processes, marine productivity, and public health and take full advantage of opportunities for beneficial re-use.

New England Wind involves some limited dredging within the OECC[9] to ensure sufficient cable burial depth in areas of the seafloor affected by sand waves (see Section 3.3.4.2). For both offshore export cables combined (Phase 1), dredging may impact approximately 0.21 km^2 (52 acres)[10] along ~15.3 km (~8.3 NM) and may include up to approximately 134,800 cubic meters (176,300 cubic yards) of dredged material. For three offshore export cables combined (Phase 2), dredging may impact approximately 0.27 km^2 (67 acres)[11] along ~19.4 km (~10.5 NM) and may include up to approximately 180,000 cubic meters (235,400 cubic yards) of dredged material. If the Western Muskeget Variant is used for Phase 2, there will be either (1) one export cable installed in the Western Muskeget Variant and two export cables installed in the OECC or (2) two export cables installed in the Western Muskeget Variant and one export cable installed in the OECC. In either scenario involving the Western Muskeget Variant, dredging may impact

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9 Based on preliminary survey data for the SWDA, dredging may not be necessary prior to inter-array or inter-link cable laying, but this will be confirmed through additional data analyses.

10 Since the dredging area will overlap with the 1 m (3.3 ft) wide cable installation trench and 3 m (10 ft) wide temporary disturbance zone from the tracks or skids during cable installation (see Section 3.3.1.3.6 of COP Volume I), these areas have been subtracted from the dredging area to avoid double-counting impacts. The total dredging area including the cable installation trench is approximately 0.27 km^2 (67 acres).

11 Since the dredging area will overlap with the 1 m (3.3 ft) wide cable installation trench and 3 m (10 ft) wide temporary disturbance zone from the tracks or skids during cable installation (see Section 4.3.1.3.6 of COP Volume I), these areas have been subtracted from the dredging area to avoid double-counting impacts. The total dredging area including the cable installation trench is approximately 0.35 km^2 (86 acres).

approximately up to 0.30 km^2 (73 acres)[12] along up to ~21.1 km (~11.3 NM) and may include up to approximately 210,100 cubic meters (274,800 cubic yards) of dredged material. Actual dredge volumes will depend on the final offshore export cable alignments and cable installation method(s); a cable installation method that can achieve a deeper burial depth will require less dredging. As described in Section 3.3.4.2, bottom dumping of dredged material would only occur within sand waves.

Simulations of sand wave dredging using a trailing suction hopper dredge (TSHD) and associated disposal activities along the OECC (including the Western Muskeget Variant) show that above-ambient total suspended solids (TSS) originating from the source is intermittent along the route, matching the intermittent need for dredging. Above-ambient TSS concentrations may be present throughout the entire water column since sediments are released at or near the water surface.

Above-ambient TSS concentrations of 10 mg/L extend up to a maximum of 16 kilometers (km) (8.6 NM) from the area of activity for the TSHD model scenarios; however, concentrations greater than 10 mg/L persist less than six hours, which is well below any lethal thresholds. Deposition greater than 1 mm (0.04 in) associated with the TSHD drag arm is mainly constrained to within 150 m (492 ft) of the area of activity, whereas the same deposition thickness associated with overflow and dredged material release extends greater distances from the source, resulting in deposition mainly within 1 km (0.6 mi) but extending up to 2.3 km (1.4 mi) in isolated patches when subject to swift currents through Muskeget Channel. TSHD disposal, which releases the entire hopper of sediment in one location, results in areas with deposition of 100 mm (4 in) or greater, which is substantially greater than the cable installation scenarios.

Due to the largely coarse-grained nature of surficial sediments within the OECC, any New England Wind-generated turbidity related to cable installation or HDD at the landfall sites is expected to be temporary and limited in spatial scope (see the discussion under Water Quality Policy #2). Additional discussion of sediment dispersion modeling is provided in Section 5.2.2 of COP Volume III and Appendix III- A.

Ports and Harbors Policy #2

Obtain the widest possible public benefit from channel dredging and ensure that Designated Port Areas and developed harbors are given highest priority in the allocation of resources.

New England Wind does not involve dredging any navigation channels or Designated Port Areas (DPAs); therefore, this policy does not apply. However, although New England Wind itself is not located in a DPA, the Proponent may utilize a number of port facilities, some of which are located

12 Since the dredging area will overlap with the 1 m (3.3 ft) wide cable installation trench and 3 m (10 ft) wide temporary disturbance zone from the tracks or skids during cable installation (see Section 4.3.1.3.6 of COP Volume I), these areas have been subtracted from the dredging area to avoid double-counting impacts.

within DPAs. Ports that may be utilized to support Phase 1 and Phase 2 activities are identified in Sections 3.2.2.5, 3.2.2.6, 4.2.2.5, and 4.2.2.6 of COP Volume I. It should be noted that not all listed ports will be utilized for New England Wind activities.

Ports and Harbors Policy #3

Preserve and enhance the capacity of Designated Port Areas to accommodate water-dependent industrial uses and prevent the exclusion of such uses from tidelands and any other DPA lands over which an EEA agency exerts control by virtue of ownership or other legal authority.

Although New England Wind itself is not located within a DPA, it may utilize a number of port facilities, some of which are located within DPAs (see Ports and Harbors Policy #2 for more information).

Ports and Harbors Policy #4

For development on tidelands and other coastal waterways, preserve and enhance the immediate waterfront for vessel-related activities that require sufficient space and suitable facilities along the water's edge for operational purposes.

New England Wind will have no impact on the availability of the waterfront for vessel-related activities except for brief periods during construction. The Proponent is identifying a wide range of ports that could be used for each Phase. It is not expected that all the ports identified would be used; it is more likely that only some ports would be used during construction depending upon final commercial agreements and construction logistics planning. By identifying a wide range of ports, the Proponent expects to avoid or minimize any potential conflicts over port usage with other northeast offshore wind developers. See Section 7.7 of COP Volume III for further discussion of New England Wind's potential impacts on coastal infrastructure.

Ports and Harbors Policy #5

Encourage, through technical and financial assistance, expansion of water-dependent uses in Designated Port Areas and developed harbors, re-development of urban waterfronts, and expansion of physical and visual access.

New England Wind's facilities are not located in a DPA, developed harbor, or urban waterfront; therefore, this policy does not apply. However, although New England Wind itself is not located within a DPA, it may utilize a number of port facilities, some of which are located within DPAs.

Protected Areas

Protected Areas Policy #1

Preserve, restore, and enhance coastal Areas of Critical Environmental Concern, which are complexes of natural and cultural resources of regional or statewide significance.

New England Wind is not located within or in the immediate vicinity of any ACECs and will therefore not have any adverse impacts on ACECs. Thus, New England Wind complies with this policy.

Protected Areas Policy #2

Protect state designated scenic rivers in the coastal zone.

New England Wind is not located in or near any state designated scenic rivers; therefore, this policy does not apply.

Protected Areas Policy #3

Ensure that proposed developments in or near designated or registered historic places respect the preservation intent of the designation and that potential adverse effects are minimized.

Terrestrial and marine cultural resources management (CRM) archaeological studies, field investigations, and assessments of the visual impact assessments of New England Wind on historic resources have been conducted by qualified independent CRM professionals on behalf of the Proponent. The studies are designed to identify cultural and historic resources that may be affected by New England Wind activities and are approved in advance by applicable regulatory agencies. Details of relevant studies and findings can be found in Section 7.3 (Cultural, Historical, and Archaeological Resources); Section 7.4 (Visual Resources), Appendix III-G (Preliminary Terrestrial Archaeological Resources Report and Permit Applications), Appendix III-H.a (Visual Impact Assessment), Appendix III-H.b (Historic Properties Visual Impact Assessment), and Volume II-D (Marine Archaeological Resources Assessment).

Avoidance, minimization, and mitigation measures for terrestrial and submarine historical and archaeological resources will be determined in consultation with BOEM, Massachusetts Historical Commission (MHC), tribes, and other relevant consulting parties through the Section 106 and NEPA processes.

Public Access

Public Access Policy #1

Ensure that development (both water-dependent or nonwater-dependent) of coastal sites subject to state waterways regulation will promote general public use and enjoyment of the water's edge, to an extent commensurate with the Commonwealth's interests in flowed and filled tidelands under the Public Trust Doctrine.

Other than the construction of new onshore substations located several kilometers inland from the shoreline, New England Wind does not involve above-ground development of coastal sites and will only use coastal sites at the water's edge for landfall sites (see Coastal Hazard Policy #1 for a description of potential crossing options at the Centerville River). Construction at the Phase

1 and Phase 2 landfall sites and along the onshore cable routes may temporarily limit pedestrian access to limited areas and cause temporary noise and dust. To mitigate temporary impacts, the Proponent will adhere to the general summer limitations on construction activities on Cape Cod for Phase 1 and Phase 2. Activities at the landfall site where transmission will transition from offshore to onshore are not expected to be performed during the months of June through September unless authorized by the Town of Barnstable. Activities along the Onshore Export Cable Route and Grid Interconnection Route (particularly where the route follows public roadway layouts) will also likely be subject to significant construction limitations from Memorial Day through Labor Day unless authorized by Barnstable but could extend through June 15 subject to consent from the Department of Public Works (DPW). The Proponent will also consult with the Town of Barnstable regarding the construction schedules for both Phases.

For Phase 1, beach disturbance at the landfall site will largely be avoided through the use of HDD, which will allow the cables to pass under the beach, intertidal zone, and nearshore areas. The cables will come ashore in an existing paved parking area or other previously disturbed area and further avoid disturbing the beach. For Phase 2, For Phase 2, the Dowses Beach Landfall Site would also use HDD and the Wianno Avenue Landfall Site would use HDD or open trenching. However, the Proponent only expects to use the Wianno Avenue Landfall Site if unforeseen challenges arise that make it infeasible to use the Dowses Beach Landfall Site to accommodate all of some of the Phase 2 offshore export cables. Wianno Avenue is less suited for HDD due to the elevated onshore topography and slope of the parking lot. This landfall site is suitable for open trenching because the shoreline has already been altered by the installation of a riprap seawall, a portion of which would be temporarily removed and replaced following cable installation. Because the infrastructure proposed at the landfall site and in nearshore areas will be buried, New England Wind is not expected to cause any long-term impacts to the public's use or enjoyment of the area.

Public Access Policy #2

Improve public access to existing coastal recreation facilities and alleviate auto traffic and parking problems through improvements in public transportation and trail links (land- or water-based) to other nearby facilities. Increase capacity of existing recreation areas by facilitating multiple use and by improving management, maintenance, and public support facilities. Ensure that the adverse impacts of developments proposed near existing public access and recreation sites are minimized.

The Proponent's onshore construction schedule minimizes impacts to existing public access and recreation sites to the greatest extent practicable by limiting onshore construction activities during peak summer months and other times when demands on these resources are elevated. Specifically for Phase 1 and Phase 2, temporary construction activities at the landfall site are not expected to be performed during the months of June through September, unless authorized by the Town of Barnstable, which would minimize impacts to recreational use by the public. The Proponent will restore the Phase 1 and Phase 2 landfall sites to match existing conditions. Any paved areas that have been disturbed will be properly repaved.

Prior to construction, the Proponent will work closely with the Town of Barnstable to develop a Traffic Management Plan (TMP) for construction for Phase 1 and Phase 2. The TMP will be submitted for review and approval by appropriate municipal authorities (typically DPW/Town Engineer and Police). The TMP will be a living document such that any unanticipated change in construction location, timing, or method previously identified will result in revision of the TMP and approval by the appropriate authorities before any construction changes are implemented. The Proponent will utilize various methods of public outreach prior to and during construction to keep residents, business owners, and officials updated on the construction schedules, vehicular access, lane closures, detours, and other traffic management information, local parking availability, emergency vehicle access, construction crew movement and parking, laydown areas, staging, and equipment delivery, nighttime or weekend construction, and road repaving.

An HCA with the Town of Barnstable was executed on May 6, 2022, which provides funding to the Town to offset potential impacts associated with hosting the onshore facilities for Park City Wind. See Section 4.1.2 of COP Volume III for additional information regarding the HCA.

Public Access Policy #3

Expand existing recreation facilities and acquire and develop new public areas for coastal recreational activities, giving highest priority to regions of high need or limited site availability. Provide technical assistance to developers of both public and private recreation facilities and sites that increase public access to the shoreline to ensure that both transportation access and the recreation facilities are compatible with social and environmental characteristics of surrounding communities.

New England Wind will not significantly interfere with existing recreational facilities. See Public Access Policy #2.

Water Quality

Water Quality Policy #1

Ensure that point-source discharges and withdrawals in or affecting the coastal zone do not compromise water quality standards and protect designated uses and other interests.

New England Wind does not propose any new point-source discharges within state waters. Limited withdrawals during construction may include water for offshore cable installation and vessel functions (e.g. for bilge/ballast water). These modest and temporary water withdrawals are not anticipated to have any meaningful impact on water quality. The Proponent will comply with the conditions contained in each Phase's Water Quality Certification under Section 401 of the Clean Water Act.

Water Quality Policy #2

Ensure the implementation of nonpoint source pollution controls to promote the attainment of water quality standards and protect designated uses and other interests.

New England Wind will not alter existing stormwater volumes or drainage patterns. Onshore construction-period sedimentation and erosion controls will be implemented. Since Phase 1 onshore construction will disturb more than one acre of land, a National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater will be obtained. A NPDES General Permit for Stormwater will likely be obtained for Phase 2 as well. As noted under Habitat Policy #1, field refueling will not be performed within 30 meters (m) (100 feet [ft]) of wetlands or waterways, within 30 m (100 ft) of known private or community potable wells, or within any Town of Barnstable water supply Zone I area. Proper spill containment gear and absorption materials will be maintained for immediate use in the event of any inadvertent spills or leaks. Any Phase 1 or Phase 2 onshore substation equipment will be equipped with full containment for any components containing dielectric fluid.

The Proponent will require all vessels to comply with regulatory requirements related to the prevention and control of discharges and the prevention and control of accidental spills. The Proponent has also developed a draft Oil Spill Response Plan for New England Wind, which is included in Appendix I-F. Measures to minimize the already-remote potential for seafloor disturbance through HDD drilling fluid seepage (i.e., frac-out) are described in Section 8.6 of COP Volume III.

Offshore cable installation and dredging will result in some temporary elevated turbidity, but sediment is expected to remain relatively close to the installation activities. For offshore export cable installation within the OECC (including the Western Muskeget Variant), TSS concentrations greater than 10 mg/L typically stayed within 200 m (656 ft) of the alignment but could extend a maximum distance of approximately 2.1 km (1.1 NM). The modeling showed that most of the sediment settles out in less than three to four hours. Simulations of typical cable installation parameters (without sand wave removal) in the OECC indicated that deposition of 1 mm (0.04 in) or greater (i.e., the threshold of concern for demersal eggs) was constrained to within 100 m (328 ft) from the route centerline and maximum deposition was typically less than 5 mm (0.20 in), though there was a small isolated area associated with the vertical injector model scenario with deposition between 5 to 10 mm (0.2 to 0.4 in). A summary of the sediment dispersion modeling results for dredging is provided under Ports and Harbors Policy #1. Additional discussion of sediment dispersion modeling is provided in Section 5.2.2 of COP Volume III and Appendix III-A.

Water Quality Policy #3

Ensure that subsurface waste discharges conform to applicable standards, including the siting, construction, and maintenance requirements for on-site wastewater disposal systems, water quality standards, established Total Maximum Daily Load limits, and prohibitions on facilities in high-hazard areas.

New England Wind does not propose any subsurface waste discharges; therefore, this policy is not applicable.

3.3 Supplemental Information Related to the Massachusetts Ocean Management Plan

The Massachusetts Ocean Management Plan (OMP) is incorporated into the Massachusetts Coastal Zone Management Plan. Thus, New England Wind activities with reasonably foreseeable effects on the Massachusetts coastal zone must also comply with and be conducted in a manner consistent with the OMP.

In consultation with MA CZM, the Proponent is providing supplemental information related to key Special, Sensitive, or Unique (SSU) resources and concentrations of water-dependent uses for community-scale wind facilities such as commercial fishing, recreational fishing, and important bird habitat. A full review of consistency with the OMP is provided for Phase 1 as part of the New England Wind 1 Connector Energy Facilities Siting Board (EFSB) Petition and is expected to be provided for Phase 2 as part of a future EFSB petition.

3.3.1 Commercial Fishing

We understand from MA CZM that a principal coastal effect of concern associated with the New England Wind development is to Massachusetts-based commercial fishing interests (a coastal use). Section 7.6 of COP Volume III (Commercial Fisheries and For-Hire Recreational Fishing) provides a thorough analysis of New England Wind's potential impacts to commercial fisheries and measures to mitigate those impacts. Impact producing factors evaluated include habitat alteration, vessel traffic, cable installation/maintenance (including impacts from cable protection), navigation hazard, and fish aggregation.

Other sections of the New England Wind COP most relevant to these issues are located in Volume III and include Section 6.5 (Benthic Resources), Section 6.6 (Finfish and Invertebrates), Section 7.5 (Recreation and Tourism [Including Recreational Fishing]), Section 7.8 (Navigation and Vessel Traffic), Section 7.9 (Other Uses), Appendix III-E (Fisheries Communication Plan), Appendix III-F (Essential Fish Habitat), Appendix III-I (Navigation Safety Risk Assessment), and Appendix III-N (Economic Exposure of Commercial Fisheries).

As summarized in Section 4 and detailed in Section 7.6 of COP Volume III, the Proponent is already implementing measures to avoid and minimize impacts to commercial fishing interests, including adopting the east-west 1 x 1 NM layout strongly recommended by commercial fishermen, minimizing the potential need for cable protection, and conducting fisheries studies to obtain baseline data against which to measure potential short and long-term fisheries impacts. In addition, Appendix III-N of the COP contains a draft analysis of the value of commercial fishing harvest from New England Wind based on the most recent available data. Each of these measures is discussed in more detail below. Accordingly, it is anticipated that New England Wind will not have a significant adverse impact on commercial fishing in the Massachusetts coastal zone.

3.3.1.1 WTG and ESP Siting

The SWDA is within the MA WEA. The original siting of the MA WEA by BOEM included a significant public engagement process. Through this process, and in response to stakeholder concerns, the MA WEA was extensively modified. BOEM excluded areas of high fisheries value from the MA WEA to reduce potential conflict with commercial and recreational fishing activities. This careful siting of MA WEA, which includes the SWDA, avoids many impacts to commercial fisheries.

3.3.1.2 WTG and ESP Layout

In direct response to input from regional commercial fishermen and maritime users during review of the adjacent Vineyard Wind 1 project, the WTGs, and ESPs in the SWDA will be oriented in fixed east-to-west rows and north-to-south columns with one nautical mile (1.85 km) spacing between WTG/ESP positions. This uniform grid layout provides 1 NM wide corridors in the east-west and north-south directions as well as 0.7 NM (1.3 km) wide corridors in the northwest-southeast and northeast-southwest directions. The Proponent expects this 1 x 1 NM layout to be adopted by other developers throughout the MA WEA and Rhode Island/Massachusetts Wind energy Area (RI/MA WEA) as described in the November 1, 2019, letter sent by New England offshore wind leaseholders to the USCG.

It is important to note that offshore renewable wind energy facilities are typically designed to maximize the amount of energy that can be generated within a given area. In general, the most optimal WTG layout for wind energy production is a non-grid WTG layout with closer turbine spacing and a higher density of WTGs around the edges of the wind farm; such a design maximizes the number of WTGs per area while minimizing wake effects that impact the efficiency of downwind turbines. Thus, the Proponent has modified the WTG/ESP layout from a more typical, optimized non-grid design to minimize adverse impacts to commercial fishing operations.

In addition to minimizing adverse impacts to commercial fisheries, the 1 x 1 NM WTG/ESP layout of New England Wind minimizes potential impacts to navigation within the SWDA. The 1 x 1 NM layout of New England Wind is consistent with the USCG's recommendations contained in the Massachusetts Rhode Island Port Access Route Study (MARIPARS) published in the Federal Register on May 27, 2020 (USCG-2019-0131). The final MARIPARS found that, "After considering all options and the vessel traffic patterns within the MA/RI WEA, a standard and uniform grid pattern with at least three lines of orientation throughout the MA/RI WEA would allow for safe navigation and continuity of USCG missions through seven adjacent wind farm lease areas over more than 1400 square miles of ocean." More specifically, USCG recommended:

- "Lanes for vessel transit should be oriented in a northwest to southeast direction, 0.6 NM to 0.8 NM wide. This width will allow vessels the ability to maneuver in accordance with the COLREGS while transiting through the MA/RI WEA.
- Lanes for commercial fishing vessels actively engaged in fishing should be oriented in an east to west direction, 1 NM wide.

- Lanes for USCG SAR operations should be oriented in a north to south and east to west direction, 1 NM wide. This will ensure two lines of orientation for USCG helicopters to conduct SAR operations."

The USCG specifically recognized traditional commercial fishing patterns when making their recommendations on WTG layouts within the MA WEA and RI/MA WEA (together the "WEAs"). As stated in MARIPARS:

> "Based on fishing vessel tracks, specifically squid, mackerel, and butterfish vessels, there is significant east to west fishing activity in the WEA, particularly in August and September, following the north to south migration of the fish. Based on comments received on this report, there is a 'gentlemen's agreement' between the fixed gear fishermen and the mobile gear fishermen to prevent gear entanglement. The fixed gear fishermen set their gear along traditional LORAN-C lines that are generally in an east to west direction. The mobile gear fishermen fish in functional lanes between the set fixed gear, in a general east to west direction."

Based on these findings and recommendations from the USCG, the proposed layout is expected to accommodate traditional fishing patterns, including the "gentlemen's agreement" regarding the placement of mobile and fixed gear within the WEAs.

As described in Section 7.8.1 of COP Volume III and the Navigation Safety Risk Assessment, analyses of automatic identification system (AIS) data from 2016 to 2019 have indicated that historical vessel traffic levels within the SWDA are relatively low. From 2016 to 2019, the average number of annual fishing vessel transits through the SWDA was 422 (see Appendix III-I). AIS data indicate that most of the vessels transiting the Offshore Development Region[13] currently choose to navigate outside of the MA WEA and RI/MA WEA even when no WTGs or ESPs are present (see Section 7.8.1.1 of COP Volume III; Baird 2019). Of those vessels transiting the WEAs, many travel just inside the edge of the WEAs. Overall, based on this historical low level of traffic in the SWDA, the risk of collision between vessels is relatively low (see Section 8.1 of COP Volume III and Appendix III-I).

With the exception of New Bedford, key Massachusetts commercial fishing ports described in Section 7.6.1.1 of COP Volume III are not expected to be used for New England Wind activities and should not experience direct impacts such as increased traffic congestion or competition for dockside services. Near port facilities or adjacent waterways, New England Wind vessels may require other vessels transiting navigation channels or other areas of confined navigation (e.g. the

[13] With respect to navigation and vessel traffic, the Offshore Development Region is the broader offshore geographic region surrounding the SWDA, the OECC, and ports that could be affected by New England Wind-related activities. This includes Nantucket Sound, areas south of Martha's Vineyard and Nantucket, the MA WEA, the RI/MA WEA, and waters surrounding potential vessel routes to the ports identified for use by New England Wind.

New Bedford hurricane barrier) to adjust course, where possible, or adjust their departure/arrival times to avoid navigational conflicts. However, with the mitigation measures described in Section 3.3.1.6, the increased vessel traffic is not anticipated to result in significant disruption of vessel traffic in and around the ports.

3.3.1.3 Scour Protection and Cable Protection

Scour protection consisting of rock material may be placed around the base of each WTG and ESP foundation. It is anticipated that scour protection will be needed for the larger diameter monopiles and suction buckets, but may or may not be needed for the smaller diameter piles used for jacket and bottom-frame foundations. Scour protection will have a maximum height of 3 m (9.8 ft). Depending on the foundation type(s) selected, the maximum area of scour protection around each foundation ranges from 4,072–9,754 m^2 (1.0-2.4 acres) for the WTG foundations and 4,072–21,316 m^2 (1.0–5.3 acres) for one to five ESP foundations. Details of the specific area of scour protection for each foundation type are found in Sections 3.2.1.4 and 4.2.1.4 of COP Volume I. For WTG monopile foundations, which are expected to be used for Phase 1 and may also be used for Phase 2, the maximum expected radius of scour protection is 36–39 m (118–128 ft) compared to the 1,852 m (1 NM) spacing between foundations. The total maximum area of scour protection for both Phases is 1.04 km^2 (258 acres), which is approximately 0.23% of the maximum size of the SWDA. Thus, scour protection will cover an extremely limited portion of the SWDA.

The installation of submarine cables within the SWDA and along the OECC is not anticipated to adversely impact commercial fishing activities. The target burial depth for all inter-array, inter-link, and offshore export cables is 1.5–2.5 m (5–8 ft) below the seafloor, which engineers have determined is more than twice the burial depth that is required to protect the cables from potential fishing activities and also provides a maximum of 1 in 100,000 year probability of anchor strike, which is considered a negligible risk. Except for limited areas where the sufficient cable burial is not achieved and placement of cable protection on the seafloor is required, the inter-array, export, and offshore cables are not anticipated to interfere with any typical fishing practices.

If sufficient burial depths cannot be achieved, the cables need to cross other infrastructure (e.g. existing cables, pipes, etc.), or a cable joint requires protection, cable protection may be necessary. Based on initial survey data for the SWDA, it is conservatively estimated that up to 2% of the total length of the inter-array and inter-link cables (~11 km [6 NM]) for both Phases may potentially require cable protection, with the majority of any needed cable protection likely located immediately adjacent to the foundation's scour protection. The Proponent conservatively estimates that approximately 6% of the offshore export cables within the OECC for both Phases (or up to 7% of the offshore export cables within the OECC for both Phases if the Western Muskeget Variant is used for one or two Phase 2 export cables) and approximately 2% of the offshore export cables within the SWDA (~27 km [15 NM] total) could require cable protection. The Proponent intends to avoid or minimize the need for cable protection to the greatest extent feasible through careful site assessment and thoughtful selection of the most appropriate cable installation tool to achieve sufficient burial; therefore, the estimates of cable protection are expected to be conservative. Given that little bottom trawling or dredging occurs along the OECC, the risk of bottom fishing gear snagging on cable protection in the OECC is low. The use of pots and traps, predominantly deployed along the OECC within Nantucket Sound in Massachusetts waters, is not expected to be impacted by New England Wind.

Fishermen have expressed concerns about fishing gear becoming entangled on scour protection and cable protection. Should cable protection be required in the SWDA and OECC, it will be designed to minimize impacts to fishing gear to the extent feasible, and fishermen will be informed of the areas where cable protection is used. Upon decommissioning, scour protection would be removed. Furthermore, the Proponent is developing and implementing procedures for handling compensation to fishermen for potential gear loss. See the Fisheries Communication Plan, which is included as Appendix III-E of the COPs, for additional discussion of gear loss compensation.

The addition of foundations and scour protection, as well as cable protection in some areas, which may act as an artificial reef and provide rocky habitat previously absent from the area, could result in modest, positive impacts to recreational fisheries. In the event WTGs aggregate recreationally-targeted species, based on the intensity of recreational fishing within the SWDA and its geographic scale, neither congestion effects nor gear conflicts are expected.

3.3.1.4 Access to the SWDA and OECC

For each Phase of New England Wind, construction and installation activities will occur within very limited and well-defined areas of the SWDA and along the OECC. During construction, fishing vessels will not be precluded from operating in or transiting through the SWDA or the OECC other than where temporary safety buffer zones are established in the immediate vicinity around construction and installation vessels. Accordingly, the majority of the SWDA and OECC will remain accessible to commercial fishing vessels throughout the construction of New England Wind.

During O&M, the SWDA will be open to marine traffic, and no permanent vessel restrictions are proposed within the SWDA or along the OECC. If in-water maintenance activities are required, there could be temporary safety buffer zones established around work areas in limited areas of the SWDA or along the OECC. However, it is expected that most maintenance activities will not require in-water work but will instead be based on the WTGs and ESP structures themselves.

3.3.1.5 Economic Exposure and Impacts to Massachusetts Commercial Fisheries

While the Proponent is implementing several key measures to minimize impacts to commercial fisheries (such as the adoption of a 1 x 1 NM WTG/ESP layout and efforts to minimize cable protection), New England Wind may lead to potential changes in commercial fishing practices in the SWDA and OECC. The economic exposure and potential economic impacts to commercial fisheries, including Massachusetts-based commercial fisheries, are analyzed in detail in Appendix III-N. This draft analysis considers the potential direct impacts to commercial fisheries, as well as fisheries-related indirect and induced shoreside economic impacts, which are characterized as either upstream (related to businesses that supply inputs used in fishing) or downstream (related to businesses that buy fish for processing or distribution). The analysis is based on the most current available revenue data, including the National Oceanic and Atmospheric Administration's (NOAA) Fisheries' "Socioeconomic Impacts of Atlantic Offshore Wind Development," which indicates that the SWDA does not include high-value commercial fishing grounds. It also shows that approximately 45.21% of the landings revenue from the SWDA is from Massachusetts.

A number of factors suggest that any economic impact from New England Wind will be only a small percentage of the estimated economic exposure (i.e., a measure of fishing that occurs within the SWDA). Commercial fishing vessels will continue to have access to the SWDA and OECC as currently permitted by regulation and the east-west 1 x 1 NM layout is expected to accommodate traditional fishing patterns, including the "gentlemen's agreement" regarding the placement of mobile and fixed gear within the WEA. In addition, alternative fishing grounds with a demonstrated higher fishery revenue density are available nearby and may be fished at little to no additional cost.

Fishing congestion impacts could occur when a high concentration of vessels operating in a fishing area causes fishing vessels and gear to interfere with one another resulting in increases in fleetwide or vessel-specific fishing costs or reductions in fishing revenues, or both. As described in Appendix III-N, any modification of fishing in the SWDA and OECC or shifts in fishing effort from those areas to other areas would not be sufficient to cause fishing congestion impacts. Commercial fishing activity in the SWDA and OECC is low to modest, and fishing trips that transect the SWDA and OECC already spend most of their time and generate most of their revenues in nearby fishing areas outside the SWDA and OECC.

3.3.1.6 Avoidance, Minimization, and Mitigation Measures

As noted above, vessel restrictions are not generally proposed other than temporary safety buffer zones in the immediate vicinity of construction and installation vessels. Accordingly, the majority of the SWDA and OECC will remain accessible to commercial fishing vessels throughout the construction and O&M.

New England Wind's 1 x 1 NM WTG/ESP layout is the result of input from numerous stakeholders, including the USCG and fishermen who use or transit the SWDA, and is expected to accommodate traditional fishing patterns. To aid mariners navigating the SWDA, each WTG/ESP will be maintained as a PATON in accordance with USCG's PATON marking guidance for offshore wind facilities in First District-area waters. The Proponent will implement a uniform system of marine navigation lighting and marking for New England Wind's offshore facilities, which is currently expected to include yellow flashing lights on every WTG foundation, ESP, unique alphanumeric identifiers on the WTGs, ESPs, and/or their foundations, and high-visibility yellow paint on each foundation. The lights and alphanumeric identifiers would be visible from all directions. Mariner Radio Activated Sound Signals (MRASS) and AIS transponders are included in the offshore facilities' design to enhance marine navigation safety.

To minimize hazards to navigation, all New England Wind vessels and equipment will display the required navigation lighting and day shapes. The Proponent will issue Offshore Wind Mariner Update Bulletins and coordinate with the USCG to provide Notices to Mariners (NTMs) to notify recreational and commercial vessels of their intended operations within the Offshore Development Area (i.e., where New England Wind's offshore facilities are physically located, which includes the SWDA and the OECC).

To further minimize impacts, the Proponent has developed a Fisheries Communication Plan (FCP) (included as Appendix III-E of the COP). The purpose of the FCP is to define outreach and engagement to potentially affected fishing interests during design, development, construction, operation, and final decommissioning of offshore wind projects. Fisheries communication is conducted through several roles, including Fisheries Liaisons (FLs) and Fisheries Representatives. FLs are employed by the Proponent and are responsible for the implementation of the FCP whereas FRs represent the interests of different fisheries and fishing communities to the Proponent. The Proponent also employs a Marine Operations Liaison Officer, who is responsible for safe marine operations by the Proponent. In addition, in an effort to provide fishermen with the most accurate and precise information on work within the SWDA and along the OECC, the Proponent is currently providing and will continue to provide portable digital media with electronic charts depicting locations of New England Wind-related activities. Each WTG and ESP will also be clearly identified on NOAA charts. Finally, as stated above, the Proponent is developing and implementing procedures for handling compensation to fishermen for potential gear loss. Additional information is provided in Appendix III-E.

As described in Section 3.3.3 below, the Proponent is committed to fisheries science and research as it relates to offshore wind energy development. The Proponent is already collecting pre-construction fisheries data (via trawl and drop camera surveys) within the SWDA.

In summary, the Proponent is already implementing multiple measures to avoid and minimize impacts to commercial fisheries, most notably the adoption of an east-west 1 x 1 NM layout.

3.3.2 Recreational Fishing

Section 7.5 (Recreation and Tourism [Including Recreational Fishing]) and Section 7.6 (Commercial Fisheries and For-Hire Recreational Fishing) of COP Volume III provide a thorough analysis of New England Wind's potential impact to recreational fisheries, including for-hire reactional fishing, and measures to mitigate those impacts. A brief summary is provided below.

3.2.2.1 Potential Impacts

With respect to recreational fishing, impact producing factors evaluated include habitat alteration, vessel traffic, cable installation/maintenance (including impacts from cable protection), navigation hazard, and fish aggregation.

During construction of New England Wind, the construction vessels operating in the SWDA and along the OECC may temporarily preclude recreational boating and fishing activities in the immediate vicinity of construction vessels or cause recreational fishermen to slightly alter their navigation routes. Construction activities may affect recreational fishing activities by impacting recreationally-important species. While the SWDA is targeted by recreational fishermen, other areas within and outside the MA WEA and RI/MA WEA have higher concentrations of recreational fishing activity (Kneebone and Capizzano 2020). The proximity of the SWDA and OECC to numerous productive recreational fishing areas suggests that the highly localized impacts of construction and installation activities will result in only minimal impacts to recreational species.

During O&M, recreational fisheries may be impacted by fish aggregation and potential navigation hazards due to the presence of structures in the Offshore Development Area. As noted under Section 3.3.1.2, the 1 x 1 NM WTG/ESP layout will facilitate safe navigation through the SWDA. Given the typically smaller size of recreational vessels, navigation impacts through the SWDA are not anticipated.

In fact, New England Wind could result in modest, positive impacts to recreational fisheries. The addition of foundations and scour protection, as well as cable protection in some areas, may act as an artificial reef and provide rocky habitat previously absent from the area. Increases in biodiversity and abundance of fish have been observed around WTG foundations due to attraction of fish species to new structured habitat (Riefolo et al. 2016; Raoux et al. 2017). In the event WTGs aggregate recreationally targeted species, based on the intensity of recreational fishing within the SWDA and its geographic scale, neither congestion effects nor gear conflicts are expected. Anglers' interest in visiting the SWDA may also lead to an increased number of fishing trips out of nearby ports which could support an increase in angler expenditures at local bait shops, gas stations, and other shoreside dependents (Kirkpatrick et al. 2017).

3.2.2.2 Avoidance, Minimization, and Mitigation Measures

As discussed under Section 3.3.1.6, the Proponent will implement measures to avoid, minimize, and mitigate potential impacts to recreational fisheries, including:

- Adopting a 1 x 1 NM WTG/ESP layout to facilitate vessel navigation through the SWDA.
- Maintaining all WTGs/ESPs as PATONs in accordance with USCG guidance.
- Equipping all New England Wind-related vessels and equipment with the required marine navigation lighting and day shapes.
- Using temporary safety buffer zones to improve safety in the vicinity of active work areas.
- Issuing Offshore Wind Mariner Update Bulletins and coordinating with the USCG to provide NTMs.

- Implementing an FCP to facilitate regular and productive communication with fishermen, including recreational fishermen (see Appendix III-E).

3.3.3 Fisheries Studies and Monitoring Plans

As described in Section 6.5, Section 6.6, and Appendix III-F of COP Volume III, impacts to finfish and invertebrates within the SWDA and along the OECC from construction of each Phase of New England Wind, including those species targeted by commercial fishermen, are expected to be short-term and localized. Only a small portion of available habitat in the area will be impacted by New England Wind construction activities and recovery is expected. Nevertheless, the Proponent will conduct fisheries and benthic habitat monitoring to assess the potential impacts of New England Wind on finfish, invertebrates, and their habitats.

Working with the Massachusetts School for Marine Science and Technology (SMAST), the Proponent is already developing and implementing fisheries studies. Specific to New England Wind, the Proponent is currently collecting pre-construction fisheries data within the SWDA. The surveys are being conducted by SMAST scientists onboard commercial fishing vessels.

Pre-construction surveys began in spring 2019. The primary goal of the pre-construction surveys is to provide data on seasonal fish abundance, distribution, population structure and community composition for a future environmental assessment using a beyond Before-After-Control-Impact (BACI) framework as recommended by BOEM (BOEM 2013). The pre-construction surveys in the SWDA[14] include trawl surveys and drop camera surveys.

- Trawl surveys are planned to occur each season (spring, summer, winter, fall) within the SWDA until the start of New England Wind construction. A demersal otter trawl, further referred to as a trawl, is a net that is towed behind a vessel along the seafloor expanded horizontally by a pair of otter boards or trawl doors. Trawls tend to be relatively indiscriminate in the fish and invertebrates they collect; hence trawls are a general tool for assessing the biological communities along the seafloor and are widely used by institutions worldwide for ecological monitoring. The methodology for the trawl survey was adapted from the Atlantic States Marine Fisheries Commission's (ASMFC) Northeast Area Monitoring and Assessment Program (NEAMAP) nearshore trawl survey. Tow locations within the SWDA were selected using a systematic random sampling design. The study area (369 km^2) was sub-divided into 10 sub-areas (each ~36.9 km^2), and one trawl tow was made in each of the 10 sub-areas to ensure adequate spatial coverage

[14] The geographic area studied for the New England Wind pre-construction fisheries studies is currently referred to as the "501 South Study Area."

throughout the survey area. As of August 2021, a total of eight trawl surveys have been conducted: spring 2019, summer 2019, fall 2019, winter 2020, summer 2020, fall 2020, winter 2021, and spring 2021.[15]

- Drop camera surveys are planned to occur twice per year in the SWDA until the start of New England Wind construction. The minimally invasive, image-based drop camera surveys allow for practical data collection of the epibenthic community without causing a disturbance to the seafloor. The SMAST drop camera surveys can be used to better understand benthic macrofaunal community characteristics, substrate, and the spatial and temporal scales of potential impacts on these communities and habitats. Samples are taken at 13 stations placed 5.6 km apart following a grid design. As of August 2021, five drop camera surveys have been completed (in July 2019, October 2019, July 2020, October 2020, and May 2021).

In partnership with Vineyard Wind 1, the New England Aquarium's Anderson Cabot Center for Ocean Life studied highly migratory species presence across the Massachusetts Wind Energy Area (MA WEA) and Rhode Island/Massachusetts Wind Energy Area (RI/MA WEA) based on a desktop review and input from the pelagic recreational fleet. The study determined that recreational effort for highly migratory species is widespread throughout southern New England, with the highest levels of recreational fishing activity occurring to the west of the MA WEA and RI/MA WEA in the waters south and east of Montauk Point and Block Island (Kneebone and Capizzano 2020). The results of this effort are included in Sections 7.5 and 7.6 of Volume III of the COP. This study resulted in an additional funding proposal from INSPIRE Environmental in partnership with the New England Aquarium to the Massachusetts Clean Energy Center (MassCEC) to support a two-year acoustic tagging and tracking study of highly migratory species at recreational fishing hotspots in the MA WEA and RI/MA WEA that were identified in the initial study. The Proponent, in conjunction with other offshore wind developers, plans to further support this study effort by deploying additional receivers in their lease areas. For more information on the highly migratory species surveys and New England Wind fisheries surveys (as well as several seasons of survey reports), see https://www.parkcitywind.com/fisheries.

The Proponent also plans to develop a framework for fisheries studies within the SWDA during and post-construction. In recognition of the regional nature of fisheries science, the Proponent expects that such during- and post-construction studies will involve coordination with other offshore wind energy developers in the MA WEA and RI/MA WEA, especially since there may be some offshore wind energy construction occurring concurrently in multiple lease areas. The Proponent is already engaging in collaboration with other developers, fishing industry representatives, and state and federal agencies through its participation in the Responsible Offshore Science Alliance (ROSA) and a Regional Wildlife Science Entity (RWSE). The Proponent

[15] The spring 2020 trawl survey did not occur due to concerns regarding risk of exposure to COVID-19 onboard the planned vessel.

also expects the development of the fisheries studies will be undertaken in coordination with BOEM, federal and state agencies such as NOAA Fisheries and the Massachusetts Division of Marine Fisheries, fisheries stakeholders, academic institutions, and other stakeholders. The Proponent has collaborated and will continue to collaborate with federal and state agencies to design surveys that align with established survey methods so that the data generated can be compared to previous data and ongoing regional studies to support a regional, longer-term study program to monitor the regional impacts of offshore wind development.

In addition, the Proponent is committed to developing an appropriate benthic monitoring framework for New England Wind, should it be necessary, in consultation with BOEM and other agencies as appropriate (See Appendix III-U for the draft framework). The framework for New England Wind will consider the draft Benthic Habitat Monitoring Plan for Vineyard Wind 1 in Lease Area OCS-A 0501. Due to the similarities in habitat across Lease Areas OCS-A 0501 and OCS-A 0534, the monitoring data collected during the Vineyard Wind 1 monitoring effort may also inform expected impacts to and recovery of benthic communities within the SWDA.

The survey and monitoring work conducted by the Proponent will generate a substantial body of environmental, fisheries, and other data, which will be available in the public domain in a manner consistent with other academic research. Much of the data is publicly available through the federal and state permitting process, as well as reports or academic publications that may come out of the survey or monitoring work. The Proponent also plans to make all fisheries monitoring data generated publicly available on its website. For other environmental and fisheries data, the Proponent will explore cost-effective and appropriate ways to store and make data publicly available and easy to access. Through ROSA and an RWSE, the Proponent will work with fishermen, regulators, stakeholders, and neighboring developers to find ways to streamline and standardize available data across all offshore efforts.

3.3.4 Cable Installation and Monitoring

As described in Section 2, four to five offshore export cables will be installed for New England Wind. Offshore export cable installation is described in detail in Sections 3.3.1.3 and 4.3.1.3 of COP Volume I for Phases 1 and 2, respectively. The following section provides a discussion of key concerns identified by MA CZM in relation to offshore export cable installation activities.

3.3.4.1 Co-Location of New England Wind and Vineyard Wind 1 Offshore Export Cables

As described in Section 2.3 of COP Volume I, based upon careful consideration of multiple technical, environmental, and commercial factors, the Proponent identified the OECC for New England Wind that is largely the same OECC included in the approved Vineyard Wind 1 COP, but it has been widened by approximately 300 m (984 ft) to the west along the entire corridor and by approximately 300 m (984 ft) to the east in portions of Muskeget Channel, for a total width of approximately 950–1,700 m (3,100–5,500 ft).

It is expected that the Vineyard Wind 1 offshore export cables will be located in the central or eastern portion of the OECC. To avoid cable crossings, the two Phase 1 cables are expected to be located to the west of the Vineyard Wind 1 cables and, subsequently, the two to three Phase 2 cables are expected to be installed to the west of the Phase 1 cables. The cables will typically be separated by a distance of 50–100 m (164–328 ft) to provide appropriate flexibility for routing and installation and to allow for maintenance or repairs, although this distance could be further adjusted pending ongoing routing evaluation (see Figure 2.3-1 of COP Volume I). While the Phase 1 and Phase 2 cable(s) are expected to be physically located west of the Vineyard Wind 1 cables, temporary construction impacts (e.g. use of anchors) during installation of the Phase 1 or Phase 2 cables may occur anywhere within the OECC.

For both New England Wind and Vineyard Wind 1, given currently available technology, the Proponent is using the fewest number of HVAC offshore export cables that can reliably deliver power from the projects to shore. Co-locating the Vineyard Wind 1 and New England Wind offshore export cables within a common OECC provides several benefits:

1. The OECC provides for an efficient, technically feasible connection of the SWDA to the grid interconnection point in West Barnstable. There are limited substations within reasonable proximity to Lease Area OCS-A 0534 that can accommodate power from Phase 1 and/or Phase 2, so Eversource's 345 kV West Barnstable Substation has been selected as the grid interconnection point for each Phase of New England Wind.[16] Accordingly, the offshore export cables must bring power from the SWDA to a landfall site within reasonable proximity to the West Barnstable grid interconnection, and the Proponent has identified that landfall sites will be located in Barnstable for both Phases. Further, because the SWDA is bordered to the northwest and southeast by other developers' lease areas[17], the only suitable route to shore is from the northeastern border of the SWDA. Given these considerations, there are limited options available to route cables from the northeastern boundary of the SWDA to landfall sites in Barnstable. As described in Appendix I-G, multiple route options were evaluated when siting the OECC for Vineyard Wind 1 and it was determined that the current OECC allows for less impacts than other alternatives evaluated, less electrical line losses, and lower installation and operational costs. Accordingly, using substantially the same OECC for New England Wind as Vineyard Wind 1 provides a viable route from the SWDA to the grid interconnection point that minimizes environmental, operational, and commercial impacts relative to longer alternative routes.

[16] As described in Section 4.1.3.3, one or more Phase 2 HVAC offshore export cables may deliver power to an alternative grid interconnection point if unforeseen technical, logistical, or grid interconnection issues arise.

[17] The SWDA is bordered to the northeast by Vineyard Wind 1, which is a joint venture between Avangrid Renewables and Copenhagen Infrastructure Partners.

2. The geological conditions within the OECC are well understood and the site geology and conditions are suitable for cable installation. Through the OECC survey work completed as part of Vineyard Wind 1, a large amount of survey data was collected. By the end of 2019, more than 4,272 km (2,307 NM) of geophysical trackline data, 123 vibracores, 83 cone penetrometer tests (CPTs), 82 benthic grab samples with still photographs, and 50 underwater video transects were gathered to support the characterization of the OECC.[18] Additionally, reconnaissance survey work for Vineyard Wind 1 (see Appendix I-G), which included coverage of the western portion of Muskeget Channel and routes to the east of Horseshoe Shoal in Nantucket Sound, did not identify areas where conditions appeared more favorable for cable installation. To the contrary, such reconnaissance survey work identified features outside of the OECC such as shoals, large concentrations of boulders, deep channels, and high currents that would make cable installation and maintenance in an alternate location more challenging. These factors would increase health and safety risk during installation and maintenance, risk of not achieving sufficient burial depths, and risk of cable exposure. The Proponent has also assessed the OECC for installation feasibility, which includes ensuring that water depths are suitable for fully-loaded cable installation vessels, slopes are workable for typical cable installation tools, sufficient room is available for anchoring, etc. Based on these detailed geotechnical and installation feasibility analyses, the Proponent has determined that the identified cable corridor is the most suitable for cable installation and the needs of New England Wind.

3. The use of a shared OECC has important commercial considerations while also helping to minimize environmental impacts. By utilizing a shared OECC, the Proponent is able to leverage the existing survey work already performed for Vineyard Wind 1, which means less survey vessel work and equipment usage, fewer man hours at sea and associated health and safety risks, fewer air emissions, and lower risk of potential impacts to marine species, as well as decreased survey costs, which are a significant portion of pre-construction costs. Lessons learned during the installation of Vineyard Wind 1's cables specific to the conditions within the OECC will undoubtedly inform and benefit the installation of New England Wind's offshore export cables. The use of the same OECC for Vineyard Wind 1 and New England Wind also limits the disturbed areas to a single corridor. The Proponent proposes a target burial depth below potential conflict with fishing gear. The Proponent will prioritize achieving sufficient cable burial depth; however, where sufficient burial depth cannot be achieved and cable protection is required, or should marine users elect to avoid these areas, co-locating the Vineyard Wind 1 and New England Wind cables within a shared OECC would limit the potential area of impact.

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[18] Additional survey data was collected for the expanded portions of the OECC in 2020; this data, in conjunction with the data already collected, will be used by the cable installation contractor (once selected) to further assess conditions present in the OECC, determine cable alignments within the OECC, and select cable installation tools that are appropriate for the site conditions.

4. The Vineyard Wind 1 OECC was thoroughly evaluated and approved by the Commonwealth of Massachusetts and BOEM. BOEM has also already reviewed all existing geophysical and geotechnical data for the Vineyard Wind 1 OECC.

To assess the feasibility of using the same OECC for Vineyard Wind 1 and New England Wind, the Proponent commissioned a preliminary route design study for the New England Wind cables, which is provided as Appendix III-P. This report includes a comprehensive assessment of the geophysical and geotechnical conditions along the route, including the presence of seabed features and considerations such as sand waves, magnetic anomalies, coarse deposits, rocks or boulders, water depths, and seabed slopes. Recommendations for cable installation tools that are appropriate for the site conditions are also included. Ultimately, the preliminary route design study demonstrates that it is technically feasible to place the additional New England Wind cables within the OECC. However, the preliminary cable alignments are expected to be refined following detailed engineering.

Thus, the Proponent is effectively achieving a cost-effective solution which looks much like "shared transmission" but with none of the attendant drawbacks (from a wind energy developer's perspective) including substantial technological, development, and regulatory risks.

3.3.4.2 Offshore Export Cable Installation

Prior to offshore export cable laying, a pre-lay grapnel run, and pre-lay survey will be performed to clear obstructions, such as abandoned fishing gear and other marine debris, and inspect the route. Large boulders along the route may need to be relocated prior to cable installation.

Some dredging of the upper portions of sand waves may also be required prior to cable laying to achieve sufficient burial depth below the stable sea bottom (see Sections 3.3.1.3.5 and 4.3.1.3.5 of COP Volume I). Dredging will be limited only to the extent required to achieve adequate cable burial depth during cable installation. Where dredging is necessary, it is conservatively assumed that the dredge corridor will typically be 15 m (50 ft) wide at the bottom (to allow for equipment maneuverability) with approximately 1:3 sideslopes for each of the two cables. However, the depth of dredging will vary with the height of sand waves; hence the dimensions of the sideslopes will likewise vary with the depth of dredging and sediment conditions. This dredge corridor includes the up to 1 m (3.3 ft) wide cable installation trench and the up to 3 m (10 ft) wide temporary disturbance zone from the tracks or skids of the cable installation equipment. The average dredge depth is approximately 0.5 m (1.6 ft) and may range up to 5.25 m (17 ft) in localized areas. The total vertical disturbance within sand waves is up to 8 m (26 ft), which includes dredging and cable installation.

For the two Phase 1 offshore export cables combined, dredging may impact approximately 0.21 km^2 (52 acres)[19] along ~15.3 km (~8.3 NM) and may include up to approximately 134,800 cubic meters (176,300 cubic yards) of dredged material. For the three Phase 2 offshore export cables combined, dredging may impact approximately 0.27 km^2 (67 acres)[20] along ~19.4 km (~10.5 NM) and may include up to approximately 180,000 cubic meters (235,400 cubic yards) of dredged material. If the Western Muskeget Variant is used for Phase 2, there will be either (1) one export cable installed in the Western Muskeget Variant and two export cables installed in the OECC or (2) two export cables installed in the Western Muskeget Variant and one export cable installed in the OECC. In either scenario involving the Western Muskeget Variant, dredging may impact approximately up to 0.30 km^2 (73 acres)[21] along up to ~21.1 km (~11.3 NM) and may include up to approximately 210,100 cubic meters (274,800 cubic yards) of dredged material. Actual dredge volumes will depend on the final cable alignments and cable installation method(s); a cable installation method that can achieve a deeper burial depth will require less dredging. Appendix III-P provides the maximum extent of dredging.

Dredging could be accomplished by several techniques. European offshore wind projects have typically used a TSHD. A TSHD vessel contains one or more drag arms that extend from the vessel, rest on the seafloor, and suction up sediments. Dredges of this type are also commonly used in the US for channel maintenance, beach nourishment, and other projects. For New England Wind, a TSHD would be used to remove enough of the top of a sand wave to allow subsequent cable installation into the stable seabed using one of the techniques described below. Should a TSHD be used, it is anticipated that the TSHD would dredge along the cable alignment until the hopper was filled to an appropriate capacity; then, the TSHD would sail several hundred meters away and deposit the dredged material within the OECC. Bottom dumping of dredged material would only occur within sand waves (see Figure 3.3-3 of COP Volume I).

A second dredging technique involves jetting by controlled flow excavation. Controlled flow excavation uses a pressurized stream of water to push sediments to the side. The controlled flow excavation tool draws in seawater from the sides and then propels the water out from a vertical downpipe at a specified pressure and volume. The downpipe is positioned over the cable alignment, enabling the stream of water to fluidize the sediments around the cable, which allows

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19 Since the dredging area will overlap with the 1 m (3.3 ft) wide cable installation trench and 3 m (10 ft) wide temporary disturbance zone from the tracks or skids during cable installation (see Section 3.3.1.3.6), these areas have been subtracted from the dredging area to avoid double-counting impacts. The total dredging area including the cable installation trench is approximately 0.27 km^2 (67 acres).

20 Since the dredging area will overlap with the 1 m (3.3 ft) wide cable installation trench and 3 m (10 ft) wide temporary disturbance zone from the tracks or skids during cable installation (see Section 4.3.1.3.6), these areas have been subtracted from the dredging area to avoid double-counting impacts. The total dredging area including the cable installation trench is approximately 0.35 km^2 (86 acres).

21 Since the dredging area will overlap with the 1 m (3.3 ft) wide cable installation trench and 3 m (10 ft) wide temporary disturbance zone from the tracks or skids during cable installation (see Section 4.3.1.3.6 of COP Volume I), these areas have been subtracted from the dredging area to avoid double-counting impacts.

the cable to settle into the trench. This process causes the top layer of sediments to be sidecast to either side of the trench. In this way, controlled flow excavation simultaneously removes the top of the sand wave and bury the cable. Typically, a number of passes are required to lower the cable to the minimum sufficient burial depth.

A TSHD can be used in sand waves of most sizes, whereas the controlled flow excavation technique is most likely to be used in areas where sand waves are less than 2 m (6.6 ft) high. Therefore, sand wave dredging could be accomplished entirely by the TSHD on its own or through a combination of controlled flow excavation and TSHD, with controlled flow excavation used for smaller sand waves and TSHD used to remove larger sand waves.

Following the route clearance activities and any required dredging, the offshore export cables will be installed. The offshore export cables will have a target burial depth of 1.5 to 2.5 m (5 to 8 ft) below the seafloor, which the Proponent's engineers have determined is more than twice the burial depth required to protect the cables from fishing activities and also provides a maximum of 1 in 100,000 year probability of anchor strike, which is considered a negligible risk (see Appendix III-P of COP Volume III).

Several possible techniques may be used during cable installation to achieve the target burial depth (see further description below). Generally, jetting methods are better suited to sands or soft clays whereas a mechanical plow or mechanical trenching tool is better suited to stiffer soil conditions (but is also effective in a wide range of soil conditions). While the actual offshore export cable installation method(s) will be determined by the cable installer based on site-specific environmental conditions and the goal of selecting the most appropriate tool for achieving adequate burial depth, the Proponent will prioritize the least environmentally impactful cable installation alternative(s) that is/are practicable for each segment of cable installation. No blasting is proposed for cable installation.

In addition to selecting an appropriate tool for the site conditions, the Proponent will work to minimize the likelihood of insufficient cable burial. For example, if the target burial depth is not being achieved, operational modifications may be required. Subsequent attempts with a different tool (such as controlled flow excavation) may be required where engineering analysis indicates subsequent attempts may help achieve sufficient burial. As discussed in Sections 3.3.1.3.10 and 4.3.1.3.10 of COP Volume I, while every effort will be made to achieve sufficient burial, it is conservatively estimated that approximately 6% of the offshore export cables within the OECC may not achieve sufficient burial depth and will require cable protection (or up to 7% of the offshore export cables within the OECC for both Phases if the Western Muskeget Variant is used for one or two Phase 2 export cables).

The majority of the offshore export cables are expected to be installed using simultaneous lay and bury via jetting techniques (e.g. jet plow or jet trenching) or mechanical plow. Both cable installation methods are described below under "Typical Techniques." However, additional specialty techniques are retained as options to maximize the likelihood of achieving sufficient burial depth (such as in areas of coarser or more consolidated sediment, rocky bottom, or other difficult conditions) while minimizing the need for possible cable protection and accommodating varying weather conditions. Additional techniques that may be used more rarely are described below under "Other Possible Specialty Techniques."

Typical Techniques

- **Jetting techniques (e.g. jet plowing or jet trenching):** Jetting tools may be deployed using a seabed tractor, a sled, or directly suspended from a vessel. Jetting tools typically have one or two arms that extend into the seabed (or alternatively a share that runs through the seabed) equipped with nozzles which direct pressurized seawater into the seafloor. As the tool moves along the installation route, the pressurized seawater fluidizes the sediment allowing the cable to sink by its own weight to the appropriate depth or be lowered to depth by the tool. Once the arm or share moves on, the fluidized sediment naturally settles out of suspension, backfilling the narrow trench. Depending on the actual jet-plowing/jet-trenching equipment used, the width of the fluidized trench could vary between 0.4–1 m (1.3–3.3 ft). While jet-plowing will fluidize a narrow swath of sediment, it is not expected to result in significant sidecast of materials from the trench. Offshore cable installation will therefore result in some temporary elevated turbidity, but sediment is expected to remain relatively close to the installation activities (see Section 5.2.2 of COP Volume III and Appendix III-A for a discussion of sediment dispersion modeling).

- **Mechanical plowing:** A mechanical plow is pulled by a vessel (or barge) and uses cutting edge(s) and moldboard, possibly with water jet assistance, to penetrate the seabed while feeding the cable into the trench created by the plow. While the plow share itself would likely only be approximately 0.5 m (1.6 ft) wide, a 1 m (3.3 ft) wide trench disturbance is also conservatively assumed for this tool. This narrow trench will infill behind the tool, either by slumping of the trench walls or by natural infill, usually over a relatively short period of time.

Other Possible Specialty Techniques

- **Mechanical trenching:** Mechanical trenching is typically only used in more resistant sediments. A rotating chain or wheel with cutting teeth/blades cuts a trench into the seabed. The cable is laid into the trench behind the trencher and the trench collapses and backfills naturally over time.

- **Shallow-water cable installation vehicle:** While any of the "Typical Techniques" described above could be used in shallow water, the Phase 1 Envelope also includes specialty shallow-water tools (if needed). These entail deployment of "Typical Technique" from a vehicle that operates in shallow water in places where larger cable laying vessels cannot efficiently operate. The cable is first laid on the seabed, and then a vehicle drives over or alongside the cable while operating an appropriate burial tool to complete installation. The vehicle is controlled and powered from a shallower-draft vessel that holds equipment and operators above the waterline.

- **Pre-pass jetting:** Prior to cable installation, a pre-pass jetting run using a jet plow or jet trencher may be conducted along targeted sections of the cable route with stiff or hard sediments. A pre-pass jetting run is an initial pass along the cable route by the cable installation tool to loosen sediments without installing the cable. A pre-pass jetting run maximizes the likelihood of achieving sufficient burial during a subsequent pass by the cable installation tool when the cable is installed. Pre-pass jetting run impacts are largely equivalent to the cable installation impacts from jetting, which are described under "Typical Techniques" above.

- **Pre-trenching:** Pre-trenching is typically used in areas of very stiff clays. A plow or other device is used to excavate a trench, the excavated sediment is placed next to the trench, and the cable is subsequently laid into the trench. Separately or simultaneously to laying the cable, the excavated sediment is returned to the trench to cover the cable. It is unlikely that the Proponent will use a pre-trench method because site conditions are not suitable (i.e., sandy sediments would simply fall back into the trench before the cable-laying could be completed).

- **Pre-lay plow:** In limited areas of resistant sediments or high concentrations of boulders, a larger tool may be necessary to achieve cable burial. One option is a robust mechanical plow that would push boulders aside while cutting a trench into the seabed for subsequent cable burial and trench backfill. Similar to pre-trenching, this tool would only be used in limited areas if needed to achieve sufficient cable burial.

- **Precision installation:** In situations where a large tool is not able to operate or where another specialized installation tool cannot complete cable installation, a diver or ROV may be used to complete installation. The diver or ROV may use small jets or other small tools to complete installation.

- **Jetting by controlled flow excavation:** As described in Section 3.3.1.3.5 of COP Volume I, jetting by controlled flow excavation can be used for cable installation as well as dredging. A controlled flow excavation tool draws in seawater from the sides and then propels pressurized water downward over the cable alignment, enabling the stream of water to fluidize the sediments around the cable and allowing the cable to settle into the trench. This process causes the top layer of sediments to be sidecast to either side of the trench. This method will not be used as the conventional burial method for the offshore export cables, but may be used in limited locations, such as to bury cable joints or bury the cable deeper and minimize the need for cable protection where initial burial of a section of cable does not achieve sufficient depth. Typically, a number of passes are required to lower the cable to the minimum sufficient burial depth, resulting in a wider disturbance than use of a jet-plow or mechanical plow. Jetting by controlled flow excavation is not to be confused with jet plowing or jet trenching (a typical cable installation method described above).

Impacts from cable installation are expected to include an up to 1 m (3.3 ft) wide cable installation trench and an up to 3 m (10 ft) wide temporary disturbance zone from the skids/tracks of the cable installation equipment that will slide over the surface of the seafloor (each skid/track is assumed to be approximately 1.5 m [5 ft] wide). The skids or tracks have the potential to disturb benthic habitat; however, because they are not expected to dig into the seabed, the impact is expected to be minor relative to the trench. The trench is expected to naturally backfill as sediments settle out of suspension and no separate provisions to facilitate restoration of a coarse substrate are required.

Typical cable installation speeds are expected to range from 100 to 200 meters per hour (5.5 to 11 feet per minute) and it is expected that offshore export cable installation activities will occur 24 hours per day. Once offshore export cable installation has begun, to preserve the integrity of the cable, cable installation will ideally be performed as a continuous action along the entire cable alignment between splices.

Anchored cable laying vessels may be used along the entire length of the offshore export cables due to varying water depths throughout the OECC and SWDA. Anchoring during installation of the offshore export cables is expected to require the use of a nine-point anchoring system. A nine-point anchor spread provides greater force on the cable burial tool than a spread with fewer anchors thereby enabling greater burial depth. On average, anchors are assumed to reposition approximately every 400 m (1,312 ft); however, anchor resetting is highly dependent on final contractor selection and the contractor’s specific vessel(s). Anchored vessels may be equipped with spud legs that are deployed to secure the cable laying vessels while its anchors are being repositioned. To install the cable close to shore using tools that are best optimized to achieve sufficient cable burial, the cable laying vessel may temporarily ground nearshore. A jack-up vessel may be used to facilitate pulling the offshore export cables through HDD conduits installed at the landfall site. Any anchoring, jacking-up, spud leg deployment, or grounding will occur within areas of the OECC and SWDA that will have been surveyed.

Prior to the start of construction, contractors will be provided with a map of sensitive habitats with areas to avoid so they can plan their mooring positions accordingly (see the discussion under Habitat Policy #1).

3.3.4.3 Cable Monitoring

The export cables will be regularly monitored to assess depth of burial. The specific, as-built cable alignment will be monitored by the cable installation tool during installation to record the precise location (x and y) of each offshore export cable as well as the achieved burial depth (z). If the depth of burial cannot be clearly established from any of the installation techniques, additional survey work may be undertaken. While development of a final monitoring schedule is ongoing, it is expected that the cable will be surveyed with a higher frequency in the early post-construction years It is expected that the cables will be surveyed within six months of commissioning, at years one and two, and every three years thereafter. This monitoring schedule may be adjusted over time based on results of the ongoing surveys. Additionally, the cable design may include a

Distributed Temperature System (DTS), so that the temperature of the cable is monitored at all times; significant changes in temperature recorded by this system may also be used to indirectly indicate cable exposure.

3.3.5 Coastal and Marine Birds

The Proponent has conducted extensive studies, including desktop research and field surveys, to identify coastal and marine birds that may be affected by New England Wind and potential impacts to those species. These efforts have included conducting one year of monthly boat surveys in the SWDA (from October 2018 to September 2019). Section 6.2 of COP Volume III provides a detailed assessment of potential impacts to coastal and marine birds from New England Wind activities within the SWDA, along the OECC, and at the landfall site, along with avoidance, minimization, and mitigation measures. This analysis concludes that New England Wind activities are unlikely to cause population level impacts to any avian species or species group. The following section provides a summary of this assessment, with a focus on potential impacts along the OECC and at the landfall site.

3.3.5.1 Potential Impacts

Offshore export cables for both Phases will be installed within an OECC that travels north from the SWDA, passes through the eastern side of Muskeget Channel, and traverses Nantucket Sound to make landfall in the Town of Barnstable. The majority of the offshore export cables are expected to be installed using simultaneous lay and bury via jetting techniques (e.g. jet plow or jet trenching) or mechanical plow. Additionally, as described in Sections 3.3.1 and 4.3.1 of COP Volume I, sections of the OECC contain sand waves, which may need to be removed by dredging prior to cable installation.

A previous study (Veit et al. 2016) identified Muskeget Channel as a “hotspot” for common eiders, black scoters, long-tailed ducks, common and red-throated loons, and common and roseate terns. While the installation of four to five offshore export cables for New England Wind will temporarily impact only a tiny fraction of the identified “hotspot,” a further assessment of potential impacts to roseate terns was conducted.

Roseate terns, particularly those nesting in southern New England and the Gulf of Maine are highly reliant on sand lance as their primary food source. For example, chick diets at a nesting colony in Long Island Sound, New York (Great Gull Island) consisted of 97% sand lance species, while those on Bird Island in Buzzard’s Bay, Massachusetts averaged 69% (Goyert et al. 2015; Staudinger et al. 2020). Roseate terns generally feed by shallow plunge-diving or surface-dipping. A concern has been expressed that disturbance to sand lance during cable installation may in turn potentially impact roseate terns.

To assess potential disturbance to marine organisms, including fish such as sand lance, from cable installation activities, a sediment dispersion modeling study of dredging and cable installation activities was conducted and is provided in Appendix III-A of COP Volume III. The sediment dispersion modeling study includes the portion of the OECC that falls within the avian hot spot identified by Veit et al. (2016) in Muskeget Channel (including the Western Muskeget Variant). Suspended sediments generated during dredging and disposal activities and subsequent cable installation activities within Muskeget Channel will be temporary and localized. During these activities, a very limited portion (<1%) of the avian hot spot identified by Veit et al. (2016) is impacted at any one time. Excess suspended sediments at any given point are only present for a short duration (typically less than 6 hours, and only 1-3 hours for cable installation), and will only occupy the bottom few meters of the water column during and after cable installation. As described in Sections 6.5 (Benthic Resources) and 6.6 (Finfish and Invertebrates) of COP Volume III, these concentrations and durations of exposure from suspended sediments are below those causing sub-lethal or lethal effects to fish and benthic organisms, including sand lance. Accordingly, suspension of sediments from dredging and cable installation operations are expected to have little to no effect on mobile organisms such as sand lance.

As roseate terns generally feed by shallow plunge-diving or surface-dipping, temporary increased turbidity in the bottom few meters of the water column caused by offshore export cable installation is unlikely to adversely affect foraging behavior or efficiency. Furthermore, of the two sand lance species most prevalent in the region (American sand lance and Northern sand lance [*Ammodyte dubius*]), the American sand lance is more likely to occupy nearshore, shallow habitats (<20 m [66 ft] but often <2 m [6.6 ft]) (Staudinger et al. 2020) outside the deeper parts of the channel where the cables will be installed. This predicted shallower distribution of the American sand lance matches the observed distribution of breeding and staging terns in the area, which appear to spend most of their time foraging close to the shores of Tuckernuck and Muskeget Island, and surrounding shoals, not in the deeper waters of the Muskeget Channel itself (Veit and Perkins 2014).

In summary, exposure of roseate terns to offshore export cable installation activities will be temporary and localized. Because of the limited extent and short-term duration of cable installation, the loss or disturbance of individual roseate terns is unlikely.

At the landfall site, the beach and some of the dunes may be used by piping plovers. The Natural Heritage and Endangered Species Program (NHESP) has established Priority Habitat along the Centerville Harbor shoreline that includes the beach and some of the dunes adjacent to the paved parking lots at the potential Phase 1 and Phase 2 landfall sites, which include Craigville Public Beach or Covell's Beach for Phase 1 and Dowses Beach or Wianno Avenue for Phase 2 (see Figure 6.1-2 of COP Volume III). NHESP has confirmed that the mapped Priority Habitat is for piping plover at the Phase 1 landfall sites. It is expected that the mapped Priority Habitat near the Phase 2 landfall sites is also for piping plover since the Priority Habitat mapping is continuous throughout Centerville Harbor, and the Proponent will be requesting confirmation from NHESP. With the exception of Wianno Avenue, disturbance of the beach at either landfall site will be largely avoided as the cable will pass under the beach, intertidal zone, and nearshore areas via HDD. The cable will come ashore in an existing paved parking area or other previously disturbed area and thus will avoid disturbing beach or dune habitat that might be used by piping plovers, other migratory shorebirds, or seabirds. The Wianno Avenue Landfall Site is less suited for HDD than open trenching due to the elevated onshore topography and slope of the parking lot. This landfall site is suitable for open trenching because the shoreline has already been altered by the installation of a riprap seawall, a portion of which would be temporarily removed and replaced following cable installation thus, minimizing disturbance to beach or dune habitat. The Proponent only expects to use the Wianno Avenue Beach Landfall Site if unforeseen challenges arise that make it infeasible to use the Dowses Beach Landfall Site to accommodate all or some of the Phase 2 offshore export cables.

Nonetheless, due to the proximity of the coastal dune to the paved parking lots where staging activities would occur, the Proponent is developing a draft Piping Plover Protection Plan for construction activities at either landfall site that will mirror a similar plan assembled for Vineyard Wind 1 that was approved by NHESP (see Appendix III-R of COP Volume III). Based on consultations with NHESP for Vineyard Wind 1 for activities at the Covell's Beach landfall site, the Proponent expects that activities at either landfall site will begin in advance of April 1, or will not begin until after August 31, to avoid and minimize noise impacts to piping plover during the breeding season.

3.3.5.2 Avoidance, Minimization and Mitigation Measures

The SWDA is located within the MA WEA, which was established by BOEM through a multi-step process that involved significant agency and public input over a period of approximately six years. As described in Section 2 of COP Volume I, areas identified as important fishing areas and having high value sea duck habitat were excluded from the northeastern portion of the MA WEA (BOEM 2014). Effectively, the location of the SWDA minimizes and avoids exposure of birds to New England Wind's offshore wind energy generation facilities.

During construction and O&M, New England Wind will reduce lighting as much as practicable to avoid or minimize impacts to birds. In addition, whenever practicable, the Proponent will down-shield lighting or use down-lighting to limit bird attraction and disorientation. For Phase 1, the Proponent expects to use an ADLS that automatically activates all aviation obstruction lights when aircraft approach the Phase 1 WTGs, subject to BOEM approval. For Phase 2, the Proponent would expect to use the same or similar approaches to reduce lighting used for Vineyard Wind 1 and/or Phase 1, including the use of an ADLS. Use of ADLS would lessen the potential impacts of nighttime light on birds. Additionally, the Proponent will use a standardized protocol to document any dead or injured birds found on vessels and structures during construction, O&M, and decommissioning.

The Proponent is also developing a framework for a post-construction bird monitoring program in relation to Vineyard Wind 1 that can be adapted to New England Wind. This framework is being developed through consultation with federal, state, and local agencies, and with input from other stakeholders.

Finally, while cable installation is only expected to have temporary and localized impacts that will not significantly disturb roseate terns, the Proponent will incorporate any lessons learned from cable installation through Muskeget Channel for the Vineyard Wind 1 project on procedures to minimize suspended sediments. The Proponent will also incorporate information learned from the monitoring of sand lance being conducted for Vineyard Wind 1 as part of the Benthic Habitat Monitoring Plan for that project.

4.0 CONCLUSION

The Proponent has demonstrated that the proposed action described herein and in the New England Wind COP complies with the applicable enforceable policies of the approved Massachusetts Coastal Program and will be conducted in a manner consistent with such Program.

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