ATTACHMENT A - PROJECT NARRATIVE

1.0 Introduction and Project Overview

Commonwealth Wind, LLC (the Proponent) is in the process of developing and permitting an offshore wind project with a nameplate generating capacity of approximately 1,200 megawatts (MW). The offshore wind farm for Commonwealth Wind will be located in federal waters, specifically in the southern portion of Bureau of Ocean Energy Management (BOEM) Lease Area OCS-A 0534 which, at its closest point, is just over 20 miles from the southwest corner of Martha's Vineyard.

The Massachusetts-jurisdictional elements of Commonwealth Wind (i.e., portions of the offshore transmission that are in Massachusetts waters, as well as the onshore transmission, onshore substation, and grid interconnection in the town of Barnstable) are referred to as New England Wind 2 Connector (NE Wind 2 Connector), the "Project" for purposes of state, regional, and local reviews. Figure 1 in Attachment B provides an overview of the NE Wind 2 Connector.

Project components within Edgartown's offshore waters are limited to approximately 12.4 miles of the Offshore Export Cable Corridor (OECC) that has been defined for cable installation between the islands of Nantucket and Martha's Vineyard. At its closest point, the OECC boundary is approximately one mile east of the Edgartown shoreline (see Figure 2). This installation corridor was thoroughly evaluated and approved for the NE Wind 1 Connector as well as the Vineyard Wind Connector, and it remains the same for the NE Wind 2 Connector.

During permitting for the Vineyard Wind Connector, a western Muskeget option (the Western Muskeget Variant) was also identified and evaluated as an alternative alignment for the OECC. While the Western Muskeget Variant was not pursued for the NE Wind 1 Connector, it has been retained for the NE Wind 2 Connector to provide additional space and flexibility to ensure that the three proposed cables can be accommodated (see Figures 1 and 2). Although the Proponent intends to install all three NE Wind 2 Connector offshore export cables within the Primary OECC that travels through the eastern side of Muskeget Channel, the alternative option of installing one or two of the offshore export cables along the Western Muskeget Variant is being reserved by the Proponent. When measured along the Western Muskeget Variant, the OECC passes through approximately 12.8 miles of Edgartown waters (compared to 12.4 miles for the Primary OECC).

Extensive survey and engineering analyses of potential OECCs have resulted in a thoroughly vetted and studied route that connects the Lease Area in federal waters to the south shore of Cape Cod. Using a substantial portion of this well-studied OECC provides the most optimal approach for the NE Wind 2 Connector. The OECC is discussed in greater detail in Section 3.0.

The Proponent has performed a comprehensive assessment of the geophysical and geotechnical conditions along the primary OECC and Westerrn Muskeget Variant, including the presence of seabed features and considerations such as sand waves, magnetic anomalies, coarse deposits, rocks or boulders, water depths, and seabed slopes. Within these corridors, the three offshore export cables will be installed with sufficient separation to allow for safe installation and any future repair work, if required. The OECC within Edgartown waters is shown on Figure 2 in Attachment B.

The Proponent is seeking approval under the Massachusetts Wetlands Protection Act (WPA) Regulations as a Limited Project for alteration of Land Under the Ocean and Land Containing Shellfish within Edgartown's offshore waters (see Section 5.2). The alteration includes the installation of three offshore export cables as well as associated vessel anchoring and potential placement of cable protection, if needed. Each of these activities and their associated impacts to wetland resource areas in Edgartown are described in this Notice of Intent (NOI) application.

1.1 Current Permitting Status

The Commonwealth Wind project and NE Wind 2 Connector are currently under extensive review by a range of federal, state, and regional agencies to ensure that impacts to the marine environment are avoided and minimized.

All proposed elements of the larger Commonwealth Wind project are being reviewed by BOEM and other participating federal and state regulatory agencies under the National Environmental Policy Act (NEPA). While federal review processes are underway, state-level environmental review for the NE Wind 2 Connector is being led by the Executive Office of Energy and Environmental Affairs (EEA), Massachusetts Environmental Policy Act (MEPA) Office, and the Energy Facilities Siting Board (EFSB).

Rigorous environmental reviews will be highly scrutinized by a host of other state and federal permitting and review agencies including the U.S. Army Corps of Engineers (USACE), U.S. Environmental Protection Agency (EPA), Massachusetts Department of Environmental Protection (MassDEP), Massachusetts Division of Marine Fisheries (DMF), and Natural Heritage and Endangered Species Program (NHESP). In addition, portions of the NE Wind 2 Connector outside of Nantucket waters will be reviewed by the Cape Cod Commission and Martha's Vineyard Commission.

The principal environmental permits, reviews, and approvals required for the Commonwealth Wind project and NE Wind 2 Connector (as well as their approval status as of this submission) are listed in Table 1-1. By meeting the requirements for each of these review programs, permits, and approvals, the Project will demonstrate compliance with applicable state and local environmental policies.

Table 1-1 Environmental Permits, Reviews, and Approvals for the New England Wind 2 Connector and Commonwealth Wind

Agency/Regulatory Authority	Permit/Review/Approval	Status
Federal		
Bureau of Ocean Energy Management (BOEM)	Construction and Operations Plan (COP) approval/Record of Decision (ROD) National Environmental Policy Act (NEPA) Environmental Review	COP filed with BOEM July 2, 2020 NEPA review Initiated by BOEM June 30, 2021 Draft Environmental Impact Statement issued December 23, 2022.
US Environmental Protection Agency (EPA)	National Pollutant Discharge Elimination System (NPDES) Permit	To be filed (TBF)
	Outer Continental Shelf (OCS) Air Permit	Complete application filed February 13, 2023
US Army Corps of Engineers (USACE)	CWA Section 404 Permit Rivers and Harbors Act of 1899 Section 10 Individual Permit	Individual Permit Application/ENG Form 4345 submitted August 1, 2022 Complete Individual Permit Application submitted December 8, 2022 Publication of Public Notices December 23, 2022.
US National Marine Fisheries Service (NMFS)	Letter of Authorization (LOA) or Incidental Harassment Authorization (IHA)	Letter of Authorization request notice of receipt published in Federal Register August 22, 2022. Proposed ITA published in Federal Register June 6, 2023
US Coast Guard (USCG)	Private Aid to Navigation (PATON) authorization	TBF
Federal Aviation Administration (FAA)	No Hazard Determination (for activities at construction staging areas and vessel transits, if required)	TBF
State		
Massachusetts Environmental Policy Act (MEPA) Office	Certificate of Secretary of Energy and Environmental Affairs (EEA)	ENF filed September 30, 2022 DEIR filed May 31, 2023; Secretary's Certificate on the DEIR issued October 10, 2023.
Energy Facilities Siting Board (EFSB)	G.L. c. 164, § 69 Approval	Petition filed November 1, 2022. Docket # EFSB22-06
Massachusetts Department of Public Utilities (DPU)	G.L. c. 164, § 72, Approval to Construct G.L. c. 40A, § 3 Zoning Exemption	Filed November 1, 2022 Docket #: DPU 22-105/DPU 22-106
Massachusetts Department of Environmental Protection (MassDEP)	Chapter 91 Waterways License and Dredge Permit Water Quality Certification (Section 401 of the CWA)	Joint Application TBF

Table 1-1 Environmental Permits, Reviews, and Approvals for the New England Wind 2 Connector and Commonwealth Wind (Continued)

Agency/Regulatory Authority	Permit/Review/Approval	Status
State		
Massachusetts Department of Transportation (MassDOT)	Non-Vehicular Access Permit(s)	TBF
Massachusetts Board of Underwater Archaeological Resources (MBUAR)	Special Use Permit	Special Use Permit 21-006 Renewal Application Approved on April 6, 2023 (issued to archaeologist, not Commonwealth Wind, LLC)
Natural Heritage and Endangered Species Program (NHESP)	Conservation and Management Permit (if needed)	TBF (if needed)
Massachusetts Historical Commission (MHC)	State Archaeologist Permit #4227 (980 C.M.R. § 70.00)	Intensive survey permit application filed August 18, 2022 State Archaeologist's Permit #4227 for Intensive Survey issued October 4, 2022 (issued to archaeologist, not Commonwealth Wind, LLC)
Massachusetts Division of Marine Fisheries (DMF)	Letter of Authorization and/or Scientific Permit (for surveys and pre-lay grapnel run)	TBF
Massachusetts Office of Coastal Zone Management (CZM) / Rhode Island Coastal Resources Management Council (CRMC)	Federal Consistency Determination (15 CFR 930.57)	MA CZM review initiated September 14, 2022 RI CRMC review initiated August 5, 2022
Massachusetts Department of Conservation and Recreation	Construction and Access Permit (if needed)	TBF
Regional (for portions of NE Wind 2 Connector within regional jurisdiction)		
Cape Cod Commission (CCC)	Development of Regional Impact (DRI) Review	TBF
Martha's Vineyard Commission (MVC)	DRI Review	TBF
Local (for portions of NE Wind 2 Connector within local jurisdiction)		
Edgartown Conservation Commission	Notice of Intent (NOI)	This filing
Barnstable Conservation Commission	NOI	TBF
Mashpee Conservation Commission	NOI	TBF
Nantucket Conservation Commission	NOI	Filed October 27, 2023

2.0 Project Purpose and Public Benefits

The purpose of the Project is to deliver approximately 1,200 MW of clean, renewable wind energy to the New England electrical grid. By doing so, the Project will serve the public interest by increasing the reliability and diversity of the regional energy supply.

The NE Wind 2 Connector/Commonwealth Wind is expected to create a range of environmental and economic benefits for southeastern Massachusetts, the Commonwealth as a whole, and the entire New England region. These benefits will extend across the design, environmental review, and permitting phase, the procurement, fabrication, and construction/commissioning phase, the multi-decade operating phase, as well as the future decommissioning effort.

Project benefits are discussed in more detail below, and are expected to include:

- **Clean renewable energy at large scale and a high-capacity factor:** The location of the associated WTGs well offshore in a favorable wind regime, coupled with the efficiency of the WTGs, will enable the Project to deliver substantial quantities of power on a reliable basis, including during times of peak grid demand. The WTGs for the Project will be among the most efficient models currently available for offshore use. It is expected that the WTGs will be capable of operating with an annual capacity factor of approximately 50%. The Commonwealth Wind project will enable delivery of more than 1,200 MW to the regional electric grid, reducing ISO-NE CO_2e emissions by approximately 2.35 million tpy, the equivalent of taking 460,000 cars off the road. In addition, NOx emissions across the New England grid are expected to be reduced by approximately 1,255 tpy with SO_2 emissions being reduced by approximately 666 tpy.
- **Reducing winter energy price spikes:** The Project adds high and stable winter capacity factor offshore wind generation to the region, increasing resources available to meet electric demand needs with offshore wind-generated energy, freeing up natural gas resources to be used for necessary home heating demands. The Project will therefore be unaffected by the risk of potential fossil fuel constraints and will help alleviate price volatility. The Project could reduce the need for the gas- and oil-burning Canal Units 1 and 2 to run, especially during winter peak events when winds are high and conditions ideal for wind energy generation.
- **Improving the reliability of the electric grid in Southeastern Massachusetts:** The Project will connect to the bulk power system on Cape Cod, and thus will increase the supply of power to Barnstable County and other parts of southeastern Massachusetts (including Dukes County), an area which has experienced significant recent (and planned) generation unit retirements. Because of its interconnect location and generation type, adding more than 1,200 MW of offshore wind generation to the current power generation portfolio will provide fuel diversification and enhance the overall reliability of power generation and transmission in the region and in particular the Southeast Massachusetts

Area (SEMA), which has seen, and will continue to see, substantial changes in generation capacity. This will mitigate future costs for ensuring reliable service for Massachusetts customers.

- **Additional economic benefits for the region:** Project construction will generate substantial economic benefits, including opportunities for regional maritime industries.
- **New employment opportunities:** The Proponent is committed to spurring and facilitating the creation, development, growth, and sustainability of a long-term offshore wind industry in New England, including a robust local supply chain, a well-trained local workforce throughout development, construction, and operations activities, local port facilities capable of fabrication and construction of key project components, and advanced manufacturing capabilities, all of which will cement New England as a leader in offshore wind. Commonwealth Wind estimates the Project will create 11,000 full time equivalent (FTE) direct job years. In addition, the project will help induce employment at the Salem marshalling port and the Prysmian Cable manufacturing facility in Somerset.
- **Support for Massachusetts policies:** The Project is entirely consistent with, and critical to, the Commonwealth's emission reduction policies, including the GWSA goals. Supplying emissions-free energy to the New England electric grid will displace fossil fuel sources, including in Massachusetts, which would otherwise operate to supply that power.

A more extensive discussion of Project benefits was provided in Section 1.9 of the Draft Environmental Impact Report (DEIR) submitted to the MEPA Office. The DEIR can be found at https://www.commonwealthwind.com/permitting.

3.0 Existing Offshore Conditions

Offshore wind projects are unique infrastructure that utilize rapidly changing technologies deployed in a dynamic marine environment. The high-energy marine environment can cause features like shoals to be in a constant state of change, resulting in corresponding water depth changes. Experience in the offshore wind industry in Europe as well as offshore cable installations in the U.S. has demonstrated that the use of an installation "corridor" can provide flexibility in the engineering and installation stages to maximize the likelihood of successful cable burial while also avoiding and minimizing environmental impacts.

Extensive survey and engineering analyses of potential OECCs have resulted in a thoroughly vetted and studied route that connects the Lease Area in federal waters to the south shore of Cape Cod. Using a substantial portion of this well-studied OECC provides the most optimal approach for the NE Wind 2 Connector. Project engineers have determined that the OECC can accommodate the additional cables proposed for the NE Wind 2 Connector, possibly with inclusion of the Western Muskeget Variant. The OECC has a typical width of approximately 3,500 feet (1,060 m), and its width ranges from approximately 3,100 to 5,500 feet (950 to 1,700 m) (unchanged from the NE Wind 1 Connector).

Results from the marine survey efforts performed from 2017 through 2020 have been compiled in a plan set, provided as Attachment C, which presents information that includes, but is not limited to, bathymetry, select video still images, benthic habitat characterization, and delineation of hard bottom, complex bottom, and eelgrass.

Using accumulated survey data, the Proponent has conducted a comprehensive geotechnical evaluation of the shallow subsurface conditions present along the OECC and has determined that these conditions are favorable for cable installation. 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, and that sufficient room is available for anchoring, etc. Based on these detailed geotechnical and installation feasibility analyses, the Proponent has determined that the OECC is the most suitable for cable installation and the needs of Commonwealth Wind/NE Wind 2 Connector.

The principal technical and environmental considerations and constraints factoring into the geography of the OECC include:

- Feasibility of cable installation;
- Burial risk assessment/work to limit possibilities of cable failure;
- Avoiding and/or minimizing impacts to SSU areas mapped in the OMP;
- Avoiding and/or minimizing anchorage areas and areas with mapped shipwrecks and boulders;
- Environmental and/or permitting constraints and avoidance of impacts;
- Minimizing cable length to reduce transmission losses and cost;
- Adequate capacity delivered to the grid connection point;
- Available landfall locations;
- Maintaining a suitable water depth (typically of at least 20 feet [6 m]), and avoiding shoals;
- Avoiding slopes where the seafloor bathymetry changes dramatically; and
- Crossing large seabed slopes and existing offshore cables in a perpendicular, or nearly perpendicular, orientation.

The offshore cable corridor within the jurisdiction of the Edgartown Conservation Commission is shown on Figure 2. The total length of the OECC within Edgartown waters is approximately 12.4 miles (12.8 miles if utilizing the Western Muskeget Variant). The Project will avoid core habitat for whales, and the corridor will avoid and minimize impacts to hard/complex bottom habitat mapped in the OECC (see Section 3.1).

3.1 Special, Sensitive, and Unique (SSU) Habitats

The Massachusetts Ocean Management Plan (OMP) and relevant OMP Regulations, found at 301 CMR 28.00, include management standards for Special, Sensitive, and Unique (SSU) Resources. Specific to cable projects, the OMP identifies the following SSUs: (1) core habitat of the North Atlantic right whale, fin, and humpback whales; (2) hard/complex seafloor; (3) eelgrass; and (4) intertidal flats. Activities in SSU areas are permitted if the maps delineating the SSU resources do not accurately characterize the resource based on substantial site-specific information (301 CMR 28.04(2)(b)(1)) or there is no less damaging practicable alternative taking into consideration cost, existing technology, and logistics, all practicable measures have been taken to avoid damage to SSUs (including mitigation measures and time of year controls), and the public benefits outweigh the public detriments (see 301 CMR 28.04(2)(b)(2-4)).

The Proponent completed detailed marine surveys within the OECC proposed for the Project and has refined the SSU areas using data that comply with the data standards requirements in the OMP Regulations at 301 CMR 28.08(1) (see Figure 3 and Attachment C). Specifically, the Proponent has met with representatives of the Secretary of the EEA, CZM, and other relevant agencies before, during, and after marine surveys specifically to discuss refinement of the SSU areas. Data collected as a result of those surveys are based on contemporary and accepted standards, as informed by the multiple consultations described above and therefore is appropriate to use under 301 CMR 28.08(1)(b).

Using the refined SSU delineations generated as a result of marine surveys, the Proponent has determined it is not possible to completely avoid SSUs, specifically hard/complex seafloor, but that no other SSUs will be impacted. Numerous technical and environmental considerations and constraints, including avoidance of SSUs, have factored into the routing of the OECC and Western Muskeget Variant. The OECC and Western Muskeget Variant are consistent with OMP Regulations because no less environmentally damaging practicable alternative exists, all practicable measures have been or will be taken to avoid damage to SSU areas, and the public benefits outweigh the public costs.

The discussion below addresses hard bottom and complex bottom mapped within the OECC in Edgartown waters based on the Proponent’s marine survey results. There is no eelgrass present within the OECC in Edgartown waters. Eelgrass historically present in the Cape Poge area around the northeast corner of Edgartown is well outside the OECC, and no impacts from the Project are anticipated.

3.1.1 Hard and Complex Bottom

Hard seafloor is seabed characterized by exposed bedrock or concentrations of boulder, cobble, or other similar hard bottom distinguished from surrounding unconsolidated sediments. Complex seafloor is a morphologically rugged seafloor characterized by high variability in bathymetric aspect and gradient. Biogenic reefs and man-made structures, such as artificial reefs, shipwrecks, or other functionally equivalent structures, may provide additional suitable substrate for the development of hard bottom biological communities. Hard/complex seafloor is seabed characterized singly or by the combination of hard seafloor, complex seafloor, artificial reefs, biogenic reefs, or shipwrecks and obstructions to navigation.

Cable projects are considered an allowed use under the OMP for certain SSU resources, including hard/complex seafloor. However, the guidelines outlined in the OMP call for the avoidance of hard/complex seafloor to the extent practicable. The Proponent has conducted geological and geotechnical surveys of the OECC to identify locations of hard/complex seafloor as well as performed extensive benthic sampling and imaging to characterize habitat and inform the final placement of the offshore export cables to avoid or minimize potential effects to this SSU resource.

As a component of evaluating and minimizing potential impacts related to the Project, the Proponent has conducted extensive surveys of the OECC and has mapped hard bottom and complex bottom (bedform fields). Hard and complex bottom areas delineated from survey results are depicted on Figure 3 as well as the marine survey plan provided in Attachment C. Based on marine survey data, it is not feasible for cable installation activities to completely avoid hard or complex bottom, particularly in areas such as Muskeget Channel where hard or complex bottom extends across most of the entire corridor.

Hard Bottom Impacts

The area between Martha's Vineyard and Nantucket, in the vicinity of Muskeget Channel, has shoals and strong tidal currents. The feasible routes through the Muskeget Channel area would all affect some areas mapped in the OMP and confirmed through marine surveys as hard/complex bottom. In addition to the OMP-mapped hard/complex bottom, the marine surveys have identified additional areas where greater than 50% of the seafloor is characterized by higher concentrations of boulders, bathymetric relief, and coverage by coarse material.

The Proponent, in identifying the OECC and Western Muskeget Variant, has sought to avoid and/or minimize passage through areas of hard bottom due to its value as an SSU resource as well as potential installation challenges related to achieving target cable burial depth. However, as shown on Figure 3 and in the plan set depicting results from the marine surveys within Edgartown waters (see Attachment C), areas of the OECC that exhibit coarse deposits and associated rugged seafloor topography are present in the Muskeget Channel area, where hard bottom covers the full width of the installation corridor. It is important to note that while some impacts to hard bottom are unavoidable in these areas, almost all of the OECC will remain unaffected by the cable installation; rather, three narrow strips of seabed, one for each cable alignment, will be impacted by the cable installation.

Complex Bottom Impacts

As shown on Figure 3 and in Attachment C, within Edgartown waters the preliminary cable alignments within the OECC avoid areas of complex bottom when possible, although in some areas complex bottom covers the full width of the corridor. In some areas along the OECC, bedform fields (i.e., ripples, megaripples, and sand waves) of varying sizes are present and are morphologically dynamic. Due to the mobility of the sediments in this habitat, development of infaunal communities is greatly reduced compared to more stable seabed areas. While this equates to a lower productive infaunal benthic regime, the bottom morphology and dynamics of the fields is reportedly attractive to finfish. The areal extent of these bedforms is constantly changing with subtle environmental shifts in water depths, sediment grain size, and current flow. This is a laterally extensive habitat due to the predominantly sandy seafloor and tidal currents flowing over the bottom and constantly reworking sediment.

Some areas of Nantucket Sound (including within the Town of Edgartown waters) have active sand waves that can exceed 12 feet (3.7 m) in height. Marine survey work has enabled the Proponent to assess these areas, which may require some pre-cable-laying dredging to ensure that the necessary burial depth can be achieved and maintained. The stretch of the OECC where sand wave dredging may be needed is largely coincident with areas mapped as complex bottom as shown on Figure 3. It is important to note that dredging, if performed, would not occur along the entire stretch where sand waves may be present; rather, dredging would only be performed to remove the tops of each sand wave to the extent needed at the time of construction to ensure sufficient burial within the stable seabed. Dredging will be performed as close in time to cable installation as possible to avoid mobile sand waves re-covering the dredged area.

A number of possible sand wave dredging techniques are under consideration (see Section 4.2.4). For all three offshore export cables combined, the Proponent's engineers anticipate that the length of dredging in Edgartown waters could be approximately 2.2 miles assuming all three cables are installed within the Primary OECC (Scenario 1); the estimated length of dredging would increase to 2.8 miles for "Scenario 2" (two cables in the Primary OECC and one cable in the Western Muskeget Variant) and to 3.3 miles for "Scenario 3" (one cable in the Primary OECC and two cables in the Western Muskeget Variant). It is important to note that since sand waves are mobile features with shifting morphology, this length of dredging is an estimate.

3.1.2 Eelgrass

Eelgrass (*Zostera marina*) beds form an important habitat in the coastal environment that provides refuge and sustenance for a large number and variety of species, as well as serving as a critical component of sediment and shoreline stabilization. Preliminary routing for the Project considered data from MassDEP's *Eelgrass Mapping Project* as well as the OMP, and the Proponent has performed specific eelgrass surveys within the OECC. The Proponent's marine surveys have not detected any eelgrass within the OECC in Edgartown waters, and the Project is not expected to have any impacts on eelgrass beds inside or outside of Edgartown waters.

3.1.3 North Atlantic Right Whale Core Habitat

The North Atlantic right whale (*Eubalaena glacialis*) is a state- and federally listed endangered species that regularly uses Massachusetts waters for feeding. The OMP established the North Atlantic right whale core habitat SSU resource based on data that identified statistically significant use of certain areas of the Massachusetts coast by right whales (Massachusetts Geographic Information System [MassGIS], 2020). There is no core habitat for the species mapped within the OECC, and the Project avoids OMP-mapped core habitat for whales, including the North Atlantic right whale. The Project does not include any structures or work within the area of core habitat for the North Atlantic right whale mapped as an SSU area in the OMP.

3.2 Shellfish Habitat

As shown on Figure 4 in Attachment B, the DMF has mapped suitable shellfish habitat for Surf Clam and Blue Mussel along portions of the OECC that passes through Edgartown waters. These areas are believed to be suitable for shellfish based on the expertise of DMF and local Shellfish Constables, input from commercial fishermen, and information contained in maps and studies of shellfish in Massachusetts. DMF shellfish suitability areas include sites where shellfish have been observed since the mid-1970s but may not currently support shellfish, and therefore could represent potential habitat areas.

Anticipated Project impacts to mapped shellfish habitat are discussed in Sections 4.3 and 5.3.2.

3.3 Rare Species Habitat

The Massachusetts NHESP has mapped all state waters within Nantucket Sound and Muskeget Channel as priority habitat of state-listed rare species, largely for birds that utilize coastal waters (e.g., piping plover, terns) (Massachusetts Natural Heritage Atlas, 15th Edition, 2021). As a result, the portion of the OECC that passes within Edgartown waters will necessarily cross priority habitat (see Figure 5 in Attachment B).

The Proponent is consulting with the NHESP in accordance with the Massachusetts Endangered Species Act (MESA) (321 CMR 10.14) to ensure that impacts to offshore rare species are avoided or minimized to greatest extent practicable. Pursuant to 310 CMR 10.37, the Proponent will submit a copy of this NOI to the NHESP for MESA review.

4.0 Cable Installation Activities, Impacts, and Mitigation Measures

This section describes the various methods of cable installation that could be used to install the three proposed offshore export cables within the OECC in Edgartown waters. It also includes a description of the anticipated impacts to the seafloor from cable installation and associated activities (e.g., vessel anchoring).

4.1 General Installation Methods

The three offshore export cables will be installed at a target burial depth of approximately 5 to 8 feet (1.5 to 2.5 meters) below stable seabed, which the Proponent's engineers have determined will protect the cables from various conditions including anchor strikes and fishing activities. Offshore export cable installation is expected to be performed primarily via simultaneous lay and bury using jetting techniques (e.g., jet plow or jet trenching) or mechanical plow. 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 wider 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. The two most common methods are described below under "Typical Techniques."

While the Proponent anticipates primarily using jetting techniques or mechanical plowing for installing the offshore export cables, other specialty techniques may be used in a limited fashion in certain areas 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, where the typical techniques may not be feasible for achieving sufficient cable burial depth), while minimizing the need for possible cable protection and accommodating varying weather conditions. These additional techniques that may be used where necessary 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 plow 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 under its own weight to the appropriate depth or be lowered to depth by the tool. Once the arm or plow share moves on, the fluidized sediment naturally settles out of suspension, backfilling the narrow trench. Depending on the actual jet-plow equipment used, the width of the fluidized trench could vary between 1.3 and 3.3 ft (0.4 – 1 meters). 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 4.3 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 1.6 ft (0.5 meters) wide, a 3.3-ft (1 meter) 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 Project also includes specialty shallow-water tools if needed. In this scenario, either of the Typical Techniques described above would be deployed from a vehicle that operates in shallow water 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 the subsequent pass by the cable installation tool when the cable is installed. Impacts from the pre-pass jetting run are largely equivalent to cable installation impacts from jetting described under "Typical Techniques" above.

- **Pre-trenching:** Pre-trenching is typically used in areas of very stiff clays. A trencher 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 Company will use a pre-trench method because site conditions are generally not suitable (i.e., sandy sediments would simply fall back into the trench before the cable-laying could be completed), and the Proponent is seeking to maximize simultaneous lay and burial to ensure the safety of cables and a more efficient construction schedule. If needed, it would likely be necessary for only very limited areas.

- **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, if this tool is needed it would only be used in limited areas to achieve sufficient cable burial.

- **Post-lay burial:** In situations where a large tool is not able to operate, or where another specialized installation tool cannot complete installation, a diver, or Remotely Operated Vehicle (ROV) may be used to complete installation. The diver or ROV may use small jets and other small tools to complete installation.

- **Jetting by controlled flow excavation:** Jetting by 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 down pipe at a specified pressure and volume. The down pipe is positioned over the cable alignment, enabling the stream of water to fluidize the sediment around the cable, which allows 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 buries the cable. Typically, a number of passes are required to lower the cable to the minimum sufficient burial depth. 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. Controlled flow may require several passes to lower the cable to a 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). Jetting by controlled flow excavation can also be used for dredging small sand waves.

Cable burial will temporarily displace marine sediments, but in normal operations these displaced sediments return to the ocean floor in the wake of the cable installation vehicle generally within a few meters of the furrow created by the cable installation. Particle sediment monitoring studies recently completed for the Block Island Wind Farm's offshore cable installation found that displaced sediments were an average of 12.5 feet (3.8 meters) from the trench with a thickness of 2.8 inches (7 cm).[1]

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1 James Elliott, K. Smith, D.R. Gallien, and A. Khan. 2017. Observing Cable Laying and Particle Settlement During the Construction of the Block Island Wind Farm. Final Report to the U.S. Department of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs. OCS Study BOEM 2017-027. 225 pp.

For any of the offshore export cable installation methodologies described above, the trench would be expected to backfill naturally after passage of the tool since surveys have identified only granular material (not clays) along the OECC. Where cobbles are present on the seafloor, they are mixed with granular material (e.g., sand), and therefore even though cobbles may be present, the sediment is expected to behave as a frictional material, resulting in natural backfilling of the trench. Given the high-energy marine environment along the OECC, this trench backfilling is likely to occur in a short period of time; this process was recently evidenced in the Martha's Vineyard Hybrid Cable Project installed from Falmouth to Tisbury (on Martha's Vineyard), where a post-construction marine survey conducted in 2015 within six weeks of installation of a submarine cable found that benthic disturbances were only visible along some parts of the cable route. It is anticipated that a condition of the 401 WQC will require the Proponent to submit a bathymetric survey of the routes within Commonwealth waters to MassDEP depicting prior- and post-installation conditions.

In accordance with normal industry practice, a pre-lay "grapnel run" will be completed. The pre-lay grapnel run will consist of a vessel towing equipment (i.e., a grapnel train) that hooks and recovers obstructions such as fishing gear, ropes, and wires from the seafloor. Depending on the size and type of debris, the debris will be either removed from the route or recovered and brought aboard the vessel deck. Any abandoned fishing gear recovered will be disposed of or returned to its owner in accordance with requirements of DMF and other relevant Massachusetts regulations.

The proposed offshore cables will be deployed from a turntable mechanism aboard a cable ship or cable barge and installed along a surveyed installation corridor. This installation corridor will be within the surveyed OECC to enable the avoidance or minimization of impacts. Impacts will be avoided and minimized by allowing the contractor to micro-site the cable inside the installation corridor such that localized areas of hard bottom or boulders, for example, may be avoided. This installation corridor, rather than a specific cable alignment, allows for optimal routing of the cables.

Cable burial tools (e.g., jet-plow, mechanical plow) can be mounted on a sled pulled by the cable-laying vessel. This installation technique is routinely used for wind energy cable projects in Europe and has proven effective in dynamic marine environments like the proposed Project route. Typical cable installation speeds are expected to range from 230 to 656 feet (70 to 200 m) per hour, and it is expected that installation activities for the offshore export cables will occur 24 hours per day. For the integrity of the cable, this activity is ideally performed as a continuous action along the entire cable alignment up to splice joints.

Although the Proponent is considering the use of Dynamic Positioning (DP) vessels, anchored cable laying vessels may be used along the entire length of the offshore export cables due to varying water depths throughout the OECC (see Section 4.2.2).

The Proponent's preferred installation approach is to install the offshore export cables sequentially. The three sets of cables within the OECC (Vineyard Wind Connector's two offshore export cables, NE Wind 1 Connector's two offshore export cables, and NE Wind 2 Connector's three offshore export cables) will typically be separated by a distance of 164 to 328 feet (50 to 100 m) to provide appropriate flexibility for routing, installation, and maintenance or repairs. This separation distance could be further adjusted, pending ongoing routing evaluation, to account for local conditions, such as deeper waters, micro-siting for sensitive habitat areas, or other environmental or technical reasons.

4.2 Anticipated Project Impacts

As described in Section 3.1, results from multiple seasons of marine surveys have enabled the Proponent to refine mapping of hard bottom, complex bottom, and eelgrass within the OECC, and the Proponent's engineers have defined preliminary cable alignments within the OECC to avoid and minimize impacts (the Project will not impact eelgrass). Table 4-1 provides the most current estimates for seabed impacts associated with installation of the three proposed offshore export cables in Edgartown waters. The table provides impact estimates for three scenarios: (1) all three offshore export cables are installed in the primary OECC; (2) two of the cables are in the primary OECC with one in the Western Muskeget Variant; and (3) one of the cables is in the primary OECC with two in the Western Muskeget Variant. Anticipated impacts associated with specific operations required to complete the offshore export cable installations in Edgartown waters are discussed in the following sections.

Table 4-1 Impacts to Land Under the Ocean from Installation of Offshore Export Cables within Edgartown Waters (impact areas in acres)

Activity	Duration of Impact (Temporary / Permanent)	Scenario 1	Scenario 2	Scenario 3
		3 Cables in Primary OECC	2 Cables in Primary OECC, 1 in W. Muskeget Variant	1 Cable in Primary OECC, 2 in W. Muskeget Variant
Total Cable Length (statute miles)[1]	N/A	37.2	37.6	38.0
Sand Wave Dredging[2]	Temporary	13.0	17.7	20.3
Trench impact zone[3, 5]	Temporary	14.9	15.0	15.2
Disturbance from tool skids/tracks[4, 5]	Temporary	45.1	45.6	46.1
Anchoring[6]	Temporary	10.3	10.4	10.6
Cable Protection[7]	Permanent	5.3-16	7.8-23.3	10.2-30.6

Notes:

1. Route lengths provided in miles, with 1 mile = 0.87 nautical miles. This length is based on the 12.4-mile length of the Primary OECC and 12.8-mile length of the OECC when using the Western Muskeget Variant within Edgartown waters.
2. To avoid double-counting impacts, the total area of dredging disturbance does not include the 3.3-foot-wide cable installation trench and approximately 10-foot skid/track width quantified in subsequent rows of the table. Dredge volumes are presented in Table 4-2.
3. Based on information from the Proponent's engineers, depending on the tool used for cable installation (e.g., jet-plow, mechanical plow, etc.), the direct trenching impact area will vary between 1.3 and 3.3 feet (0.4 – 1 m) in width. The impact area provided in the table reflects the most conservative 3.3-foot (1-m) impact width.

4. Depending on the tool used for cable installation (e.g., jet-plow, mechanical plow), each skid/track on the installation tool will have the potential to cause minor disturbance along an area approximately 5 feet (1.5 m) wide, although the functional impact is expected to be minor. The impact area identified in the table reflects the temporary impact from two skids/tracks, and therefore assumes a 10-foot-wide (3-m-wide) disturbance zone.
5. Some pre-pass jetting may occur along limited sections of the offshore export cable route; however, impacts will occur within the same geographical space as cable installation.
6. Anchoring impacts are based on the length of the OECC and vessel repositioning every 400m (1,312 feet). See Section 4.2.2.
7. The estimated length of cable protection for the three offshore export cables combined within Edgartown waters is approximately 4.5 miles (Scenario 1), 6.5 miles (Scenario 2), and 8.6 miles (Scenario 3). The estimated area of cable protection in Edgartown waters is shown as a range because if rock protection is used, the width will be approximately 30 feet (9 m), but if concrete mattresses or rock gabion bags are employed, the estimated area of impact would be reduced by approximately two-thirds, reflecting a narrower width of approximately 10 feet (3 m). The cable protection used in limited areas to cover offshore export cable joints or cable crossings may be wider, but the total cable protection area will remain the same.

4.2.1 Cable Installation Tool

Offshore export cable installation tools are described in detail in Section 4.1. A variety of tools may be used for portions of the OECC, many of which are specialized and would be used only in limited areas where specific conditions are encountered. Typical techniques include jetting techniques (e.g., jet-plow or jet trenching) or a mechanical plow, either of which would have a temporary trench disturbance up to approximately 3.3 feet (1 m) wide. In addition to the trench impact on the seafloor, the cable installation tool may move along the seafloor on skids or tracks. These skids or tracks, each up to approximately 5 feet (1.5 m) wide, will slide over the surface of the seafloor, and as such have the potential to disturb benthic habitat; however, they are not expected to dig into the seabed, and therefore the impact is expected to be minor. Since the cable installation will affect a corridor that will pass similar habitats on adjacent sides, the area affected by cable burial or skids/tracks on the installation tool is expected to recolonize relatively quickly.

Cable installation activities will result in some temporary elevated turbidity and localized sediment dispersion in the water column. The sediment, which is briefly fluidized by the cable installation tool, will quickly settle out of the water column (see Section 4.3).

A BOEM study published in March 2017 assessed impacts from cable-laying activities associated with construction of the Block Island Wind Farm.[2] That study identified formation of a temporary 2.7-inch-high "overspill levee" on either side of the cable placement. The overspill levee consisted of material deposited outside of the trench during jet-plow activities. The BOEM study indicated that overspill levees were observed an average distance of 12.5 feet (3.8 m) from the centerline of the trench (for an average total impact width of 25 feet) at an average thickness of 2.7 inches

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[2] James Elliott, K. Smith, D.R. Gallien, and A. Khan. 2017. *Observing Cable Laying and Particle Settlement during the Construction of the Block Island Wind Farm*. Final Report to the U.S. Department of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs. OCS Study BOEM 2017-027. 225 pp.

(7 centimeters [cm]). Importantly, the study described the overspill levees as very temporary features that were only apparent for a few days following cable installation, and that they were gone within one to two weeks. The study authors noted:

> *We attribute the ability to discern the overspill levees to surveying during jet-trenching and within a few days after the jet-trenching occurred from the mainland cable lay… We have noted that on post-lay surveys conducted 1 to 2 weeks after trenching, that overspill levees are rarely distinguishable.*[3]

In addition, a post-construction marine survey conducted in 2015 within six weeks of installation of a submarine cable from Falmouth to Tisbury on Martha's Vineyard found that benthic disturbance only remained visible along some parts of the cable route, and that other parts had already recovered.[4]

Given the dynamic marine environment, the Proponent anticipates that the trench area, regardless of which cable installation method is used, will be quickly reworked by currents, refilling possible low portions of the trench as quickly as they would remove any potential "overspill levees". The Proponent is coordinating with state and federal agencies regarding benthic habitat monitoring.

The Proponent will prioritize the least environmentally impactful cable installation alternative(s) that is/are practicable for each segment of 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.

4.2.2 Anchoring

Anchored cable-laying vessels may be used along the entire length of the OECC, and particularly in areas of shallow water and/or strong currents, because many portions of the OECC are too shallow for Dynamic Positioning (DP) vessels. Anchored vessels will avoid sensitive seafloor habitats to the greatest extent practicable. Contractors will be provided with a map of sensitive habitats prior to construction with areas to avoid and shall plan their mooring positions accordingly with the goal of avoiding sensitive seafloor habitats and SSU areas (e.g., hard or complex bottom) as long as it does not compromise the vessel's safety or the cable installation.

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3 James Elliott, K. Smith, D.R. Gallien, and A. Khan. 2017. Observing Cable Laying and Particle Settlement during the Construction of the Block Island Wind Farm. Final Report to the U.S. Department of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs. OCS Study BOEM 2017-027. p.46.

4 Epsilon Associates, Inc. and CR Environmental, Inc. 2015. Martha's Vineyard Hybrid Submarine Cable Post-Construction Marine Survey Report. Prepared for Comcast and NSTAR Electric Company.

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. Mid-line buoys are placed somewhere along the length of an anchor line to support the weight of the line and hold a portion of the line off the seabed. By suspending the anchor lines, mid-line buoys prevent the line from dragging and scouring the seafloor, which minimizes anchor sweep and associated impacts. Vessel operators will determine when the use of mid-line anchor buoys is considered infeasible and/or unsafe.

The Proponent is committed to avoiding anchoring except where necessary. The discussion below presents a conservative estimate of potential anchoring impacts.

Project engineers estimate approximately 323 square feet (ft^2) (30 m^2) of disturbance from each anchor (assuming an approximately 10-ton anchor), such that a vessel equipped with nine anchors would disturb approximately 2,900 ft^2 (270 m^2) per each anchoring set. A nine-point anchor spread provides greater force on the cable burial tool than a spread with fewer anchors, enabling greater burial depth. The assumptions herein include 10-ton anchors to accommodate larger installation vessels. In addition, anchored vessels may deploy up to two spud legs at each anchoring location to secure the cable-laying vessel while its anchors are being repositioned. Each deployment of two spuds would affect approximately 110 square feet (10 m^2) of seafloor, making the total disturbance per anchoring set approximately 3,010 square feet (280 m^2).

Anchoring impacts are calculated based on a need to reposition an anchored vessel every approximately 1,312 feet (400 m).

Potential impacts from anchoring are summarized in Table 4-1. Anchoring will not be performed in eelgrass. Any anchoring will occur within the surveyed area of the OECC.

4.2.3 Cable Protection

The Proponent's priority will be to achieve adequate burial depth of the three offshore export cables and to avoid the need for any cable protection. However, achieving adequate burial depth may be unsuccessful in areas where the seafloor is composed of consolidated materials, making complete avoidance of cable protection measures infeasible. If sufficient burial depth cannot be achieved, cable protection methods may be necessary. The Proponent will seek to avoid and/or minimize the use of such cable protections, and cable protection will only be used where necessary, thus minimizing potential impacts. If needed, the methods for cable protection will be:

- **Concrete mattresses:** These "mattresses" are prefabricated flexible concrete coverings consisting of high-strength concrete profiled blocks cast around a mesh material (e.g., ultra-violet stabilized polypropylene rope) that holds the blocks together. This mattress construction provides flexibility, enabling the mattress to settle over the contours of the cable and seafloor. If needed, the mesh in this application would be designed to have a decades-long lifespan. Project engineers have determined that cable protection of approximately 10 feet (3 m) wide would be sufficient to protect the cable. These mattresses can be manufactured from ECOncrete, a bio-enhanced concrete admixture that has been determined to promote settlement of marine fauna and flora, a benefit over traditional concrete mattresses. ECOncrete mattresses allow for efficient installation and can be designed with tapered edges to minimize snagging from fishing gear and anchors.

- **Gabion rock bags:** This method involves rocks encased in a net material (e.g., a polyester net) that can be accurately deployed on top of the cable and subsequently recovered, if necessary, for temporary or permanent cable protection. Each bag would be equipped with a single lifting point to enable its accurate and efficient deployment and recovery. These rock bags have been deployed in other high-energy marine environments such as the North Sea, and the net material used for the rock bags would be designed to have an approximately 50-year lifespan. Project engineers have determined that cable protection of approximately 10 feet (3 m) wide would be sufficient to protect the cable.

- **Rock placement:** Rock placement would involve the laying of rocks on top of the cable to provide protection. Rock would be installed in a controlled and accurate manner on the seafloor using a dynamic positioning fallpipe vessel. Rocks used for cable protection would be sized for site-specific conditions; where feasible, this protection would consist of rocks 2.5 inches (6.4 cm) in diameter or larger. If rock placement was the required methodology of cable protection, a greater cable protection width of approximately 30 feet (9 m) would be needed to account for sideslopes.

- **Half-shell pipes or similar (only for cable crossings or where the cable is laid on the seafloor):** These products are made from composite materials and/or cast iron with suitable corrosion protection and would be fixed around the cable to provide mechanical protection. Half-shell pipes or similar solutions are not used for remedial cable protection but could be used at cable crossings or where cable must be laid on the surface of the seabed. The half-shell pipes do not ensure protection from damage due to fishing trawls or anchor drags (although they would offer some protection, they would not prevent damage).

Project engineers estimate that for all three offshore export cable alignments combined, the length of cable protection that may be required within Edgartown waters is approximately 4.5 miles (Scenario 1), 6.5 miles (Scenario 2), or 8.6 miles (Scenario 3). Assuming concrete mattresses or gabion rock bags are used, the Proponent's engineers have determined that cable protection of approximately 10 feet (3 m) wide will be sufficient to protect the cable. Should rock placement be used for cable protection, a greater width of approximately 30 feet (9 m) would be needed to account for sideslopes.[5] The impact calculations for cable protection, presented in Table 4-1, show the range of possible impacts based on the varying widths of cable protection methods.

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. Areas requiring cable protection, if any, will be the only locations where post-installation conditions at the seafloor may permanently differ from existing conditions; however, such cable protection would only be expected within hard bottom areas, and the cable protection itself would function as hard bottom.

4.2.4 Sand Wave Dredging

As described in Section 3.0, some portions of Nantucket Sound have areas of complex bottom composed of active sand waves, which have been assessed over multiple seasons of marine surveys. Sand waves are dynamic features with changing morphology that move across the seafloor. As a result, where sand waves are large, it may be necessary to perform pre-cable-laying dredging to remove the tops of these features along the cable alignment to ensure sufficient burial within the underlying stable seabed.

The stretch of the OECC where sand wave dredging may be needed is largely coincident with areas mapped as complex bottom as shown on Figure 3. It is important to note that dredging, if performed, would not occur along the entire stretch where sand waves may be present; rather, dredging would only be performed to remove the tops of each sand wave and only to the extent needed at the time of construction to ensure sufficient burial within the stable seabed. Dredging will be performed as close in time to cable installation as possible to avoid mobile sand waves becoming re-established in the dredged area.

Where dredging is necessary, it is conservatively assumed that the dredged area will typically be approximately 50 feet (15 m) wide at the bottom (to allow for equipment maneuverability) with approximately 1:3 sideslopes for each of the three cables. The depth of dredging will vary with the height of sand waves, and hence the dimensions of the sideslopes will likewise vary with the depth of dredging and sediment conditions. This dredge corridor includes the up to 3.3-foot-wide (1-m-wide) cable installation trench and the up to 10-foot-wide (3-m-wide) temporary disturbance zone from the tracks or skids of the cable installation equipment.

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[5] There are currently no anticipated cable crossings for the proposed Project. Should a cable crossing become necessary, cable protection of up to 30 feet (9 m) wide may be necessary. In addition, based on the actual conditions encountered at splice joint locations, cable protection width may vary, but if wider than 9 feet (3 m) the cable protection at splice joints is expected to fall within total cable protection estimates.

As previously presented in Table 4-1, for all three offshore export cables combined, the Proponent's engineers anticipate that the area impacted by dredging in Edgartown waters would be up to approximately 13 acres (Scenario 1), 17.7 acres (Scenario 2), or 20.3 acres (Scenario 3) (inclusive of sideslopes but excluding the overlapping impacts from trenching and tool skids). As presented in Table 4-2 below, the estimated volume of dredged material in Edgartown waters is approximately 64,300 cubic yards (Scenario 1), 99,800 cubic yards (Scenario 2), or 105,400 cubic yards (Scenario 3). Actual dredge volumes will depend on the final cable alignments and cable installation method; a cable installation method that can achieve a deeper burial depth will require less dredging. Actual dredge volumes will depend on the final cable alignments and cable installation method; a cable installation method that can achieve a deeper burial depth will require less dredging.

Table 4-2 Summary of Dredge Volumes in Edgartown Waters

Dredge Volume	Cubic Yards
Scenario 1 – 3 cables in the Primary OECC	64,300
Scenario 2 – 2 cables in the Primary OECC and 1 cable in Western Muskeget Variant	99,800
Scenario 3 – 1 cable in the Primary OECC and 2 cables in Western Muskeget Variant	105,400

Dredging could be accomplished using the following techniques:

- **Trailing Suction Hopper Dredge:** 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 U.S. for channel maintenance, beach nourishment, and other uses. For the NE Wind 2 Connector, a TSHD would be used to remove enough of the top of a sand wave to allow subsequent cable installation within the stable seabed. Where a TSHD is used, it is anticipated that the TSHD would dredge along the cable alignment until the hopper is filled to an appropriate capacity, then the TSHD would sail several hundred meters away and deposit the dredged material within an area of the surveyed corridor that also contains sand waves.

- **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 the cable to settle into the trench. This process causes the top layer of sediments to be sidecast to either side of the trench; therefore, controlled flow excavation would both remove 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 6.6 feet (2 m) high. Therefore, the sand wave dredging could be accomplished entirely by the TSHD on its own, or the dredging could be accomplished by a combination of controlled flow excavation and TSHD, where controlled flow excavation would be used in smaller sand waves and the TSHD would be used to remove the larger sand waves.

No dredging is proposed in hard-bottom areas (e.g., boulders, cobble bottom). The only dredging proposed for the Project is where large sand waves, features that can be considered “complex” due to their bathymetric relief, necessitate pre-cable-laying dredging to ensure that adequate burial depth can be achieved. As noted previously, sand waves, although they do provide bathymetric variability, are seafloor features that change quickly and hence do not enable the formation of complex benthic communities.

4.3 Sediment Dispersion and Turbidity

To assess the potential impacts of cable installation activities, a sediment dispersion modeling assessment was carried out through two interconnected modeling tasks:

1. Development of a three-dimensional hydrodynamic model application of a domain encompassing Project activities using the HYDROMAP modeling system; and
2. Simulations of the suspended sediment fate and transport (including evaluation of seabed deposition and suspended sediment plumes) using the SSFATE modeling system to simulate installation activities. Velocity fields developed using the HYDROMAP model are used as the primary forcing for SSFATE.

The modeling was performed to characterize the effects associated with offshore cable installation activities. Effects were quantified in terms of above-ambient TSS concentrations as well as seabed deposition of sediments suspended in the water column during cable installation activities.

The Hydrodynamic and Sediment Dispersion Modeling Study shows that impacts from cable installation activities are expected to be localized and short term, as most of the mass settles out quickly and is not transported for significant distances by the currents. Above-ambient TSS concentrations stemming from cable installation for the various model scenarios remain relatively close to the cable alignment, are constrained to the bottom of the water column, and are short-lived. Above-ambient TSS concentrations substantially dissipate within one to two hours and fully dissipate in less than four hours for most of the model scenarios. Similarly, for the vertical injector model scenario, above-ambient TSS concentrations substantially dissipate within one to two hours but required up to six hours to fully dissipate, likely due to the relatively slower installation rate and deeper trench (greater volume disturbed per unit length). Above-ambient TSS concentrations greater than 10 mg/L typically stay within approximately 650 feet (200 m) of the cable alignment. Importantly, all suspended sediments are expected to settle out within a matter of hours (less than 4-6) from disturbance during typical cable installation. 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 approximately 330 feet (100 m) from the route centerline and maximum deposition was typically less than 5 mm (0.20 in) (the threshold of concern for shellfish), 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).

For context, BOEM stated in the DEIS for the Vineyard Wind project that "suspended sediment concentrations between 45 and 71 mg/L can occur in Nantucket Sound under natural tidal conditions, and increases in suspended sediment concentrations due to jet-plow are within the range of variability already caused by tidal currents, storms, trawling, and vessel propulsion."[6] Further, BOEM concluded that it expects only minor impacts on water quality due to suspended sediment during installation, dredging, and cable-laying because of the brief duration and small area of impact.

For all portions of the OECC, recolonization and recovery to pre-construction species assemblages is expected given the similarity of nearby habitat and species. Nearby, unimpacted seafloor will likely act as refuge area and supply a brood stock of species, which will begin recolonizing disturbed areas post-construction. Recovery timeframes and rates in a specific area depend on disturbance, sediment type, local hydrodynamics, and nearby species virility.[7] Previous research conducted on benthic community recovery after disturbance found that recovery to pre-construction biomass and diversity values took two to four years.[8] Other studies have observed differences in recovery rates based on sediment type, with sandy areas recovering more quickly (within 100 days of disturbance) than muddy/sand areas.[9]

Details regarding the models, their applications, and the results of the calculations are summarized here and are described in greater detail in the technical report provided as Attachment I to the ENF, which was previously submitted to the Edgartown Conservation Commission.

The results of the Hydrodynamic and Sediment Dispersion Modeling Study demonstrate that impacts will be short-term, as excess TSS concentrations are expected to only persist for a few hours and deposition is expected to typically be less than 5 mm, which is less than the sensitivity

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6 Vineyard Wind Offshore Wind Energy Project, Draft Environmental Impact Statement, U.S. Department of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs, December 2018.

7 Dernie, K. M., Kaiser, M. J., & Warwick, R. M. (2003). Recovery rates of benthic communities following physical disturbance. Journal of Animal Ecology, 72 (6),1043-1056.

8 Van Dalfsen, J. A., & Essink, K. (2001). Benthic community response to sand dredging and shoreface nourishment in Dutch coastal waters. Senckenbergiana marit, 31(2),329-32.

9 (1) Freiwald, A., Fosså, J.H., Grehan, A., Koslow, T., Roberts, J.M. (2004). Cold-water Coral Reefs. UNEP-WCMC, Cambridge, UK; and (2) Rogers, A. (2004). The biology, ecology and vulnerability of deep-water coral reefs. International Union for Conservation of Nature and Natural Resources. 10 pp.

threshold for benthic organisms. Conservative impact assumptions show that impacts on fish and shellfish will be limited in area and duration and will allow for rapid recovery to pre-installation conditions. The Project will use cable installation techniques that minimize sediment disturbance and dispersion consistent with the best available practices.

In summary:

- For sand wave dredging:
  - TSS originating from the source is intermittent along the route, matching the intermittent need for dredging and dredged material release.
    - 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 greater than 10 mg/L extend up to 10 miles (16 km) and 5.3 miles (8.5 km) from the area of activity for the TSHD and limited TSHD model scenarios, respectively; however, these concentrations persist for less than six hours for TSHD activities and for less than four hours for limited TSHD.
- For cable installation activities:
  - Above-ambient TSS concentrations substantially dissipate within one to two hours and fully dissipate in less than four hours for most model scenarios (six hours for the vertical injector scenario).
    - Above-ambient TSS concentrations greater than 10 mg/L typically stay within approximately 650 feet (200 m) of the alignment, extending up to a maximum distance of approximately 1.3 miles (2.1 km).
  - The suspended sediment plume is localized to the seabed and may be located in the lower approximately 20 feet (6 m) of the water column.
    - Sediment deposition over 1 mm thick is predicted to remain within 330 feet (100 m) of the route alignment.

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 approximately 330 feet (100 m) 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). At this deposition thickness, there are limited areas with potential temporary negative impacts to demersal eggs and species of similar sensitivity.

The Proponent anticipates that turbidity monitoring of offshore construction activities (e.g., dredging, cable installation) may be included as a condition of the 401 Water Quality Certification (WQC) to be issued by MassDEP.

5.0 Regulatory Compliance

5.1 Water-Dependent Projects

The Massachusetts Waterways Regulations (310 CMR 9.00) state that facilities ancillary to an offshore wind farm should be characterized as water-dependent, which acknowledges that such projects are unable to be located away from the water. The specific section of those Regulations (310 CMR 9.12(2)(e) is excerpted below:

> *(e) In the case of a facility generating electricity from wind power (wind turbine facility), or any ancillary facility thereto, for which an EIR is submitted, the Department shall presume such facility to be water-dependent if the Secretary has determined that such facility requires direct access to or location in tidal waters and cannot reasonably be located or operated away from tidal or inland waters, based on a comprehensive analysis of alternatives and other information analyzing measures that can be taken to avoid or minimize adverse impacts on the environment, in accordance with M.G.L. c. 30, §§ 61 through 62I.*

The EEA Secretary's Certificate on the ENF for the Project states: "According to MassDEP, the project is a water-dependent industrial use pursuant to 310 CMR 9.12(2)(b)(10) because it is an infrastructure facility that will be used to deliver electricity to the public from an offshore facility located outside the Commonwealth."

For further clarity, the WPA Regulations provide a definition of "water-dependent uses," which is excerpted here from 310 CMR 10.04.

> *<u>Water-dependent Uses</u> mean those uses and facilities which require direct access to, or location in, marine, tidal or inland waters and which therefore cannot be located away from said waters, including but not limited to: marinas, public recreational uses, navigational and commercial fishing and boating facilities, water-based recreational uses, navigation aids, basins and channels, industrial uses dependent upon waterborne transportation or requiring large volumes of cooling or processing water which cannot reasonably be located or operated at an upland site, crossings over or under water bodies or waterways (but limited to railroad and public roadway bridges, tunnels, culverts, as well as railroad tracks and public roadways connecting thereto which are generally perpendicular to the water body or waterway), **and any other uses and facilities as may further hereafter be defined as water-dependent in 310 CMR 9.00**"* (emphasis added).

A finding of water dependency is relevant for certain aspects of this filing.

5.2 Limited Project Status

Under the Massachusetts WPA, certain activities are afforded Limited Project status (310 CMR 10.04), which allows permitting authorities to approve projects that are inherently unable to meet wetland performance standards. The Proponent believes the Project does meet the wetland performance standards, but nonetheless requests a determination that the Project is afforded

Limited Project Status. Specific activities that qualify for Limited Project status are listed in the Massachusetts WPA Regulations at 310 CMR 10.04 and 310 CMR 10.53. Water-dependent projects such as the NE Wind 2 Connector are one such category of Limited Projects in this section of the Regulations:

> *310 CMR 10.53 (3) Limited Projects.*
>
> *(l) The construction, reconstruction, operation or maintenance of water dependent uses; provided, however that: 1. any portion of such work which alters a bordering vegetated wetland shall remain subject to the provisions of 310 CMR 10.55, 2. such work in any other resource area(s) found to be significant to flood control or prevention of storm damage shall meet the performance standards for that interest(s), and 3. adverse impacts from such work in any other resource area(s) shall be minimized regarding the other statutory interests for which that resource area(s) is found to be significant.*

Accordingly, the Project should be regarded as a "Limited Project" under the Massachusetts WPA Regulations. Regardless, the Proponent is striving to satisfy all applicable wetlands performance standards to the extent possible.

5.3 Wetland Resource Areas and Performance Standards

Proposed work in Edgartown waters will be located in coastal wetland resource areas (Land Under the Ocean and Land Containing Shellfish) subject to protection under the Massachusetts WPA and associated regulations (310 CMR 10.00), and potentially the Edgartown Bylaw and related Wetland Protection Regulations. The entire stretch of OECC in Edgartown waters will also pass through NHESP-mapped Priority Habitat for State-Protected Rare Species and Estimated Habitat for Rare Wildlife (see Figure 5 in Attachment B). Accordingly, the Proponent will submit copies of this NOI to the NHESP pursuant to the Massachusetts WPA Regulations (310 CMR 10.37).

Cable installation will have some unavoidable and temporary impacts to these resource areas, but these impacts will be minimized with appropriate construction methods and best management practices and will meet the applicable state performance standards, as well as the criteria in the Edgartown Bylaw and related Wetland Protection Regulations. Specific Project-related impacts are quantified in Table 4-1. The relevant performance standards for each of the above-referenced resource areas are discussed below.

5.3.1 Land Under the Ocean

Land Under the Ocean is defined as the submerged land that extends seaward from MLW out to the boundary of a municipality's jurisdiction, which in this case is the offshore boundary that lies just east of Muskeget Channel and divides the towns of Nantucket and Edgartown as depicted in Figure 2.[10]

The Massachusetts WPA Regulations require that projects located within Land Under the Ocean satisfy certain general performance standards when the resource is found to be significant to the protection of marine fisheries, protection of wildlife habitat, storm damage prevention, or flood control (310 CMR 10.25 (3) through (7)).[11] Of relevance to this Project, 310 CMR 10.25(5) states:

> *(5) Projects not included in 310 CMR 10.25(3) or (4)* [relating to dredging projects for navigational purposes] *which affect nearshore areas of land under the ocean shall not cause adverse effects by altering the bottom topography so as to increase storm damage or erosion of coastal beaches, coastal banks, coastal dunes, or salt marshes.*

Installation activities associated with the NE Wind 2 Connector will occur more than a mile from the Edgartown shore and are sufficiently limited in scope to avoid any direct or indirect impact on nearshore or onshore areas of Edgartown.

Installation of the offshore export cables will require the temporary disturbance of three narrow strips of seafloor within the OECC to achieve cable burial (see Section 4 for a more detailed discussion of construction). Cable burial will temporarily displace some sediments that do not immediately re-settle back into the fluidized trench, but in normal operations these displaced sediments return to the seafloor in the wake of the cable installation tool generally within a few meters of the furrow created by cable installation. Particle sediment monitoring studies completed for the Block Island Wind Farm's offshore cable installation found that displaced sediments were an average distance from the trench centerline of 12.5 feet (3.8 m) at a thickness 2.8 inches (7 cm).[12] Such a minor alteration to the bottom topography over one mile from the nearest shoreline would not alter water circulation or sediment transport patterns, and would not increase erosion of coastal beaches, coastal banks, coastal dunes, or salt marshes.

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[10] Refer to Massachusetts Senate Bill 0102 (1881), An Act in Relation to the Boundaries of Towns Bordering Upon the Sea.

[11] General Performance Standards (3) and (4) are relevant to dredging projects that are for navigational purposes, such as maintenance or improvement dredging of harbor entrance channels. *See* 310 CMR 10.25(3) and (4). As described above, installation of the offshore export cables will require dredging where large sand waves are present; however, because the Project is not intended to improve or maintain navigation, these performance standards do not apply.

[12] James Elliott, K. Smith, D.R. Gallien, and A. Khan. 2017. Observing Cable Laying and Particle Settlement During the Construction of the Block Island Wind Farm. Final Report to the U.S. Department of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs. OCS Study BOEM 2017-027. 225 pp.

In addition, as described in Section 4.2.4, dredging may be required in areas where currents have created large, mobile sand waves. These sand waves are located in both Muskeget Channel and Nantucket Sound, and dredging of the tops of any sand waves is expected to occur more than a mile from the nearest coastal beach, coastal bank, coastal dune, or salt marsh. Where the offshore cable installation must cross a sand wave, it will be necessary to provide additional burial depth to achieve sufficient coverage beneath the stable seabed surface and prevent the cable from being exposed as the sand wave advances across the seafloor. Therefore, where large sand waves are encountered, it will be necessary to carve a notch into the sand wave of sufficient width and depth so the cable installation tool can proceed through it, installing the cable beneath the stable seabed. The Project's dredging methods and related impacts are discussed and quantified in Section 4.2.

Any dredging required for offshore cable installation through sand waves will occur within narrow corridors in areas relatively far from shore (greater than 1 mile); therefore, regardless of the dredge method selected through sand waves, installation of the offshore export cables is not expected to increase the risk of erosion in coastal areas. Sand wave dredging in Edgartown waters is expected to temporarily impact up to approximately 13 acres (Scenario 1), 17.7 acres (Scenario 2), or 20.3 acres (Scenario 3), and dredging will comply with performance standards.

Also potentially relevant to this Project, 310 CMR 10.25(6) states:

> *(6) Projects not included in 310 CMR 10.25(3) which affect land under the ocean shall if water-dependent be designed and constructed, using best available measures, so as to minimize adverse effects, and if non-water-dependent, have no adverse effects, on marine fisheries habitat or wildlife habitat caused by:*
>
> > *(a) alterations in water circulation;*
> >
> > *(b) destruction of eelgrass (Zostera marina) or widgeon grass (Rupia maritina) beds;*
> >
> > *(c) alterations in the distribution of sediment grain size;*
> >
> > *(d) changes in water quality, including, but not limited to, other than natural fluctuations in the level of dissolved oxygen, temperature or turbidity, or the addition of pollutants; or*
> >
> > *(e) alterations of shallow submerged lands with high densities of polychaetes, mollusks or macrophytic algae.*

The Project is water-dependent as defined in the Massachusetts Waterways Regulations at 310 CMR 9.12(2)(b)10, which includes infrastructure facilities used to deliver electricity to the public from an offshore facility located outside the Commonwealth. As a water-dependent use, the Project must be designed and constructed using best available measures to minimize adverse effects.

As described in Section 4.0 of this NOI as well as in the MEPA documents that are incorporated by reference, the proposed cable installation methods are well documented as environmentally conscious operations with minimal temporary impacts to the seafloor and water quality. Installation of the export cables will require some displacement of marine sediments to achieve desired cable burial, but in most areas, the method of installation will result in minimal alteration to seafloor topography. More alteration will be required in high-energy areas where large sand waves are encountered, but these high-energy areas are characterized by constantly changing bathymetry, and any alteration due to the Project is expected to be temporary. None of the affected areas will be altered to the extent that any significant changes occur to water circulation or sediment grain size distribution.

The OECC has been sited to avoid areas of eelgrass or widgeon grass, and the installation methodologies will minimize impacts to benthic organisms. The Proponent's marine surveys have not identified any eelgrass within the OECC for the NE Wind 2 Connector. By minimizing the area disturbed during cable installation, the Proponent will minimize impacts to mollusks and other benthic organisms.

In addition, under 310 CMR 10.25(7), projects with certain adverse effects are presumed impermissible:

> *(7) Notwithstanding the provisions of 310 CMR 10.25(3) through (6), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.37.*

The NHESP has mapped all of Muskeget Channel and adjacent state waters as priority habitat of state-listed rare species (Massachusetts Natural Heritage Atlas, 15th Edition, 2021). As a result, the OECC will necessarily cross priority habitat within Edgartown waters (see Figure 5). The Proponent will consult with the NHESP in accordance with the Massachusetts Endangered Species Act (MESA, 321 CMR 10.14) to ensure that impacts within priority habitat are avoided or minimized to greatest extent practicable. These required consultations with NHESP are consistent with the procedures established under 310 CMR 10.37. Pursuant to 310 CMR 10.37, the Proponent will submit a copy of this NOI to the NHESP.

5.3.2 Land Containing Shellfish

WPA Regulations define Land Containing Shellfish as land under the ocean, tidal flats, rocky intertidal shores, salt marshes, and land under salt ponds that is known to support the following species of shellfish: Bay Scallop *(Argopecten irradians)*; Blue Mussel *(Mytilus edulis)*; Ocean Quahog *(Arctica islandica)*; Oyster *(Crassostrea virginica)*; Quahog *(Mercenaria merceneria)*; Razor Clam *(Ensis leei)*; Sea Clam *(Spisula solidissima)*; Sea Scallop *(Placopecten magellanicus)*; and Soft Shell Clam *(Mya arenaria)*.

According to maps published by the DMF, portions of the OECC within the town of Edgartown are suitable habitat for surf clam and blue mussel (see Figure 4). Offshore export cable installation within this area may result in some localized mortality of shellfish and other organisms in the direct path of the installation tool, and within the water column from water withdrawals. Soon after disturbance, recolonization and recovery to pre-construction species assemblages is expected given the similarity of nearby habitats and species, the limited area of disturbance, and the mobility of the organisms in some or all life stages. Nearby, unaffected areas will likely act as refuge areas and supply a brood stock of species, which will begin recolonizing disturbed areas post-construction. A post-construction marine survey conducted in 2015 within six weeks of installation of a submarine cable from Falmouth to Tisbury on Martha's Vineyard found that benthic disturbance only remained visible along some parts of the cable route, and that other parts had already recovered.[13]

As described in Section 4.2.2, anchoring may be required along the entire OECC, particularly in areas of shallow water and/or strong currents, to enable the option of using tools with deeper achievable burial depths. Anchors would disturb the substrate and leave a temporary irregularity in the seafloor resulting in some localized mortality of infauna. In addition, an anchor cable could sweep portions of the seafloor as the installation equipment moves along the cable.

The Massachusetts WPA Regulations require that projects located in resource areas that are determined to be significant to the protection of land containing shellfish and therefore marine fisheries shall satisfy certain general performance standards (310 CMR 10.34 (4) through (8)). These performance standards are excerpted below:

> *(4) Except as provided in 310 CMR 10.34(5), any project on land containing shellfish shall not adversely affect such land or marine fisheries by a change in the productivity of such land caused by:*
>
> > *(a) alterations of water circulation;*
> >
> > *(b) alterations in relief elevation;*
> >
> > *(c) the compacting of sediment by vehicular traffic;*
> >
> > *(d) alterations in the distribution of sediment grain size;*
> >
> > *(e) alterations in natural drainage from adjacent land; or*
> >
> > *(f) changes in water quality, including, but not limited to, other than natural fluctuations in the levels of salinity, dissolved oxygen, nutrients, temperature or turbidity, or the addition of pollutants.*

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13 Epsilon Associates, Inc. and CR Environmental, Inc. 2015. Martha's Vineyard Hybrid Submarine Cable Post-Construction Marine Survey Report. Prepared for Comcast and NSTAR Electric Company.

The Project is not anticipated to result in any permanent alterations to water circulation, relief elevation, or distribution of sediment grain size. There will be no change to natural drainage from adjacent land, and no compacting of sediments from vehicular traffic or installation gear. Offshore export cable installation will result in some temporary impacts to shellfish in the area immediately along the installation path, but these impacts are regarded as negligible given that the area of potential affect is incrementally small in comparison to the wide area of habitat present in the Project vicinity.

(5) Notwithstanding the provisions of 310 CMR 10.34(4), projects which temporarily have an adverse effect on shellfish productivity but which do not permanently destroy the habitat may be permitted if the land containing shellfish can and will be returned substantially to its former productivity in less than one year from the commencement of work, unless an extension of the Order of Conditions is granted, in which case such restoration shall be completed within one year of such extension.

The Proponent has assembled a Draft Benthic Habitat Monitoring Plan for all of New England Wind (of which NE Wind 2 Connector is a part). The plan, provided as Attachment D, is designed to document habitat and benthic community disturbance and recovery associated with construction and installation.

(6) In the case of land containing shellfish defined as significant in 310 CMR 10.34(3)(b) (i.e., those areas identified on the basis of maps and designations of the Shellfish Constable), except in Areas of Critical Environmental Concern, the issuing authority may, after consultation with the Shellfish Constable, permit the shellfish to be moved from such area under the guidelines of, and to a suitable location approved by, the Division of Marine Fisheries, in order to permit a proposed project on such land. Any such project shall not be commenced until after the moving and replanting of the shellfish have been commenced.

The Proponent will work with the DMF and the shellfish constables from any towns along the OECC to minimize impacts to shellfish habitat but is not proposing to relocate shellfish prior to cable installation.

(7) Notwithstanding 310 CMR 10.34(4) through (6), projects approved by the Division of Marine Fisheries that are specifically intended to increase the productivity of land containing shellfish may be permitted. Aquaculture projects approved by the appropriate local and state authority may also be permitted.

The Proponent is not proposing an aquaculture project, nor is it undertaking any efforts specifically intended to increase the productivity of Land Containing Shellfish.

(8) Notwithstanding the provisions of 310 CMR 10.34(4) through (7), no project may be permitted which will have any adverse effect on specified habitat of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.37.

The Massachusetts NHESP has mapped all state waters within Nantucket Sound as priority habitat of state-listed rare species (Massachusetts Natural Heritage Atlas, 15th Edition, 2021) (see Section 3.3). As a result, the OECC will necessarily cross priority habitat within Edgartown waters. The Proponent will consult with the NHESP in accordance with the MESA (321 CMR 10.14) to ensure that impacts to within priority habitat are avoided or minimized to the greatest extent practicable. These required consultations with NHESP are consistent with the procedures established under 310 CMR 10.37.

5.4 Edgartown Wetland Protection Bylaw

The local wetland protection bylaw was established to protect ten identified interests of public and private water supply, groundwater, flood control, erosion control, storm damage prevention, fisheries, shellfish, wildlife and their habitats, recreation, and preservation of natural and historic views and vistas. Most, but not all, of these same interests are protected under the Massachusetts Wetlands Protection Act, but the local bylaw extends the jurisdiction of the Edgartown Conservation Commission by adding the protected interests of recreation and preservation of views and vistas. The Project will not significantly affect either recreation or preservation of natural and historic vistas. No above-ground or above-water structures are proposed in Edgartown. Furthermore, except for temporary safety zones around vessels actively involved in cable installation, the Project will not restrict recreational use of Edgartown waters. Please refer to the preceding sections for a discussion of the interests for Land Under the Ocean and Land Containing Shellfish protected under the Massachusetts Wetlands Protection Act.

6.0 Mitigation Measures

The Project will result in unavoidable temporary impacts to offshore wetland resource areas (Land Under the Ocean and Land Containing Shellfish) as discussed and quantified in Sections 3 and 4. These impacts have been avoided and minimized through thoughtful selection of route and installation methods, and mitigation for impacts will be provided as appropriate. Perhaps most importantly, the alignment of the OECC is the product of an extensive consideration of alternatives and is itself intended to avoid and minimize potential impacts to sensitive resources, including SSU areas (i.e., eelgrass, hard bottom, complex bottom, and core habitat of the North Atlantic Right Whale). Wherever possible, the Project will avoid sensitive habitats, and where impacts cannot be avoided, the Project will attempt to minimize their extent through cable installation methodology and scheduling.

In addition, the Proponent has selected installation techniques that will minimize the amount of seafloor disturbance during installation of the export cables (see Section 4). Based on post-installation monitoring of a similar submarine cable project in Nantucket Sound, cable burial is expected to have no long-term impact on the benthic habitat, and the affected area of the seafloor is expected to be fully restored within a relatively short time. As an example, a post-construction marine survey conducted in 2015 within six weeks of installation of a submarine cable from Falmouth to Tisbury on Martha's Vineyard found that benthic disturbances only occurred along some parts of the cable route.[14]

Mitigation for unavoidable impacts to marine resources will be provided in accordance with provisions established under the Massachusetts OMP and its implementing regulations (301 CMR 28.00). Those regulations specify that projects subject to the OMP are required to pay an Ocean Development Mitigation Fee intended to compensate the Commonwealth for unavoidable impacts on public interests and rights in the Planning Area and to support planning, management, restoration, or enhancement of marine resources and uses. A fee proposal was included in the Proponent's DEIR, and will be finalized in the Secretary's Certificate on the FEIR.

14 Epsilon Associates, Inc. and CR Environmental, Inc. 2015. Martha's Vineyard Hybrid Submarine Cable Post-Construction Marine Survey Report. Prepared for Comcast and NSTAR Electric Company.