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EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
OFFICE OF COASTAL ZONE MANAGEMENT
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MEMORANDUM

TO: Matthew A. Beaton, Secretary, EEA
ATTN: Purvi Patel, MEPA Unit
FROM: Bruce Carlisle, Director, CZM
DATE: June 8, 2018
RE: EEA-15787, Vineyard Wind Connector

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced Draft Environmental Impact Report (DEIR), noticed in the *Environmental Monitor* dated May 9, 2018 and offers the following comments. CZM recommends the filing of a limited scope Supplemental DEIR to address information and analyses described below.

Project Description

With this filing, Vineyard Wind proposes to install up to three (3) 10-inch diameter 220 kV three-core AC offshore export cables to connect a large-scale wind energy project located within a lease of the federally designated Wind Energy Area offshore of Massachusetts to the New England bulk power grid. This project is part of a larger project that seeks to construct and operate an 800-megawatt (MW) offshore wind facility under the Bureau of Ocean Energy Management's (BOEM) Outer Continental Shelf (OCS) Renewable Energy Program. Major elements of the total project include a wind turbine array, offshore electrical service platforms, offshore transmission to shore, onshore underground transmission, and an onshore substation. The DEIR presents two alternative offshore export cable corridors (a Western cable corridor and an Eastern cable corridor) which can make landfall at one of three potential sites. Each proposed cable corridor may be up to 810 m wide. The Western corridor to the preferred landing (New Hampshire Avenue, Yarmouth) passes through approximately 21 miles of state waters, while the Eastern corridor to the preferred landing passes through approximately 19 miles of state waters. Both corridors include sections within the area of federal waters in the center of Nantucket Sound. The cables are proposed to be buried approximately 1.5 to 2.4 meters below the seafloor. Where cable routes will pass through sand waves present in Nantucket Sound, corridors will be approximately 65 feet wide.

Project Comments

Massachusetts Ocean Management Plan

As stated in CZM's January 30, 2018 comment on the Environmental Notification Form (ENF), under the Ocean Management Plan (OMP) and implementing regulations (301 CMR 28) the siting standard for a cable infrastructure project requires the proponent to demonstrate that no less environmentally damaging alternative is practicable and that the project will cause no significant alteration of Special, Sensitive, or Unique (SSU) resources. Cable projects in the planning area must avoid certain SSU areas, including North Atlantic right whale core habitat, Humpback whale core habitat, areas of hard/complex seafloor, intertidal flats, and eelgrass. The performance standard in the OMP requires that the proponent demonstrate that all practicable measures have been taken to



avoid damage to the SSU resources, that there will be no significant alteration of the SSU resource values or interests, and that the public benefits of the project outweigh the potential detriments posed by impacts to SSU resources.

The SSU resources potentially impacted by the project are primarily areas of hard/complex seafloor, eelgrass, and North Atlantic right whale core habitat. The OMP maps also depict areas of Sea duck core habitat, Concentrated Recreational Fishing, Concentrated Commerce Traffic, Concentrated Commercial Fishing Traffic, and Concentrated Recreational Boating that overlap with the project footprint.

CZM previously requested that data on potential effects to resources and uses caused by the construction and operation of the project be presented in the DEIR. The data presented in the DEIR do not clearly demonstrate a well-defined preferred alternative that meets the OMP performance standards. The proponent should provide a complete description of the selected alternative, a clear depiction and description of all resources and uses in or adjacent to the project footprint (including all areas of impact), and a summary of how the preferred alternative avoids or minimizes impacts to resources and uses relative to the other alternatives. For example, while the DEIR provides lengths for each route, maximum potential dredge volumes, and lengths through mapped hard/complex seafloor (Tables 2-2, 2-3, 2-4), CZM is not able to determine if the proponent's preferred route along the "Western Corridor" to New Hampshire Avenue in Yarmouth meets the OMP siting standard, as this alternative results in the greatest length of cable in both State waters and through hard/complex seafloor resources.

Detailed information comparing each proposed route relative to sensitive resources, including resources mapped during the upcoming 2018 field campaign should be provided. Specifically, upon completion of the field surveys, CZM requests the following information:

- Updated maps showing potential areas of hard/complex seafloor, including hard seafloor (areas of exposed bedrock or concentrations of boulder, cobble, or other similar hard bottom distinguished from surrounding unconsolidated sediments) complex seafloor (morphologically rugged seafloor characterized by high variability in bathymetric aspect and gradient), biogenic habitat and reefs, artificial reefs, or shipwrecks and obstructions;
- Updated eelgrass maps including the results of in-water investigations adjacent to Egg Island and in the approach area of the preferred landing at New Hampshire Avenue in Yarmouth;
- High resolution maps showing specific areas of proposed construction activity (dredging, cable laying, vessel anchoring, dredged material deposition or disposal) along the proposed cable route in relation to identified or potential resource areas; and
- Detailed anchoring plans for construction and support vessels which depict the avoidance of impacts to eelgrass beds and hard/complex seafloor from anchoring, anchor sweep, and vessels bottoming out. A narrative describing how captains will be trained and made aware of the anchoring plan should be provided.

The information collected during the 2018 field campaign should be used to demonstrate that the preferred alternative maximizes avoidance of sensitive resources outlined in the OMP and minimizes potential impacts to those resources.

A narrative describing steps that will be taken to minimize impacts to recreational and commercial fishing activities as well as navigation by recreational and commercial boaters and commercial passenger vessels should also be provided. This narrative should include, but not be limited to, information on avoiding particular areas in certain times of day or year, providing notices to mariners of specific construction activities, and/or excluding construction vessels from narrow and high transit areas (e.g. Muskeget Channel).

Turbine Spacing and Transit Corridor

Data from Vessel Monitoring Systems and Automatic Identification Systems show that significant marine vessel navigational activity occurs across the offshore wind lease areas. Due to the high volume of vessel traffic (fishing and otherwise) transiting from state waters through the offshore lease areas, the establishment of transit corridors is critically important to the safe passage of vessels. Vineyard Wind's Construction and Operations Plan describes a proposed turbine array with approximately 0.8 nautical mile (nm) between individual turbines, with two transit corridors where turbine spacing is 1.0 nm to promote the safe passage of fishing and other marine vessels. The U.S. Coast Guard is the lead authority on navigation safety and security and will review the Navigation Safety Risk Assessment and make recommendations for modifications as appropriate. An analysis of the preferred corridor route along with alternate layouts and detailed information on navigational risks and mitigation measures should be provided. Impacts to the vessels transiting this area and restrictions that would be required of these vessels should also be presented. Lastly, information relating to the joint discussions between the U.S. Coast Guard, the wind energy developers, and stakeholders including the Fisheries Working Group on Offshore Wind to configure turbine arrays to allow for adequate offshore navigation corridors should also be provided.

Species of Concern

In the comments on the ENF, CZM requested that steps to avoid impacts to whales, turtles, and seabirds during construction be detailed in the DEIR. Vineyard Wind has presented information on how construction noise disturbance and ship strikes to whales and turtles will be mitigated. However, Vineyard Wind should provide information as to how the construction activities, particularly in Muskeget Channel, will be timed, staged, and sequenced to minimize impacts to the high density of diving and plunging birds that use the channel for seasonal foraging.

Fisheries Resources

A narrative describing steps that will be taken to avoid or minimize impacts to eelgrass and winter flounder from turbidity associated with cable laying and dredging should be provided. Similarly, a narrative describing steps to be taken to minimize construction impacts to bay scallop, horseshoe crab, quahog, and soft shell clam resources at the proposed landing sites and blue mussels, surf clams, whelks, and longfin squid egg mops along the length of the cable corridor should be provided. The results of a shellfish survey plan, prepared in consultation with Massachusetts Division of Marine Fisheries (DMF) and the National Marine Fisheries Service (NMFS) and a summary of discussions with DMF and NMFS to avoid and minimize possible impacts to the resources listed above should be provided. And finally, a thorough analysis of electromagnetic field impacts on vertebrates and invertebrates found in Nantucket Sound along the proposed cable routes should also be provided. The recently released BOEM study *Electromagnetic Field (EMF) Impacts on Elasmobranch (sharks, rays, and skates) and American Lobster Movement and Migration from Direct Current Cables* (BOEM 2018-003) indicates that while electric cables did not constitute a barrier to movements across the cable for either lobsters or skates, some behavioral changes were observed, and more studies on free ranging (rather than captive) organisms may be necessary.

Cable Installation

The proponent should provide a comprehensive discussion of the potential impacts of the cable installation process, along with a statement of predicted recovery time for any affected resources. For this issue, the proponent must clearly describe if the project will utilize two or three export cables, must state the selected route to shore, and must clearly describe the selected methods of cable installation and the route segments where each method will be used.

The DEIR depicts locations where the removal of sand waves or compacted gravel/cobble seafloor is expected to be necessary before cable installation can commence (Figure 2-7). Tables 2-2, 2-3, and 2-4 present preliminary estimates of the length of hard/complex seafloor disturbed, volumes of sand waves to be dredged, and volumes of fluidized sediment from hydroplowing. These values should be updated using the most recent field data on sediment types, depths, and the location and extent of hard/complex seafloor. The lengths, areas, and volumes of disturbed seafloor should be re-calculated using:

- A multiplier associated with the number of cables that will be laid (e.g., the impact of three cables would be 3x the estimated length times width of impact presented in the DEIR for one cable);
- Area of trench widths (e.g., 65 feet in sand wave areas instead of six feet assumed in the DEIR, Table 2-4);
- Area of sediment dispersal by hydroplowing (e.g., up to 30 feet according to BOEM study 2017-027, up to 200 m (656 feet) according to Attachment H, p. 43, instead of six feet assumed in the DEIR);
- Area(s) of sediment disposal from other dredged methods;
- Estimates of the amount of time required for sidecast sediment to redistribute;
- Estimates of the amount of time required for the various benthic communities to recover from burial by sidecasted sediment;
- Estimates of the amount of time required for sand waves to re-cover dredged cable areas.

A complete description of how the dredge areas and volumes were calculated should be provided and the dredge footprint should be shown in plan-view. In addition, there should be resource assessment information for each sidecast area (e.g., areas where the trailing hopper dredge will deposit its sediment load or the mass excavator sediment drape area) to ensure that sensitive benthic habitat or fisheries resources are not impacted during this aspect of construction.

While the DEIR describes the suite of methods that may be used in cable installation, it does not evaluate the potential associated impacts due to disturbance, resuspension of sediments, sediment drape, or dredged sediment disposal. Attachment H presents the results of a sediment dispersal modeling effort, but it is not clear which of the four types of cable burial activities (jet plow, mechanical plow, mechanical trenching, trailing suction hopper dredging, mass excavator) the model depicts. CZM requests that more detailed modeling for each type of activity along with estimated resource impacts be developed. CZM also recommends that the modeled results be verified during the actual installation process. In addition, the model assumes a trench width of one meter (~3 feet; Table 9, p. 36 of Attachment H) while elsewhere the DEIR assumes a six foot trench width. The six foot trench width is supported by BOEM field study 2017-027 where the Block Island Wind Farm cable trench was found to be 2.2 meters or seven feet wide. The modeling

effort presented in Attachment H estimates that 0.2-5.0 mm of sediment is expected to fall out at a distance up to 200 m on either side of the cable trench (Att. H, p. 43). It is unclear as to what type of cable burial activity was used to calculate these results. This information should be used in the application of avoidance and mitigation standards.

The proponent should use the field data and hydrodynamic model to characterize the wave dynamics, currents, and sediment transport along the proposed cable route, particularly in areas of sand waves, to better understand whether the proposed depth of burial is sufficient to avoid the potential use of armoring. A plan for rectifying inadequate cable burial after installation and throughout the life time of the project should be drafted and provided for review. CZM discourages the use of armoring due to the detrimental impacts on commercial fishing operations (i.e., mobile gear), increased scouring of the seafloor adjacent to the hard cover and potential for invasive species colonization. CZM instead recommends additional jetting or other techniques to achieve the appropriate burial depth, and only in cases where target burial cannot be achieved, covering with sand bags or other compatible materials to protect the cable.

A crossing of the existing NSTAR Yarmouth to Nantucket cable is proposed at the mouth of Hyannis Harbor (Fig. 3-9). Methods for ensuring the protection of both cables in this busy harbor area should be clearly outlined. Additionally, the proponent should explain how the proposed cable depth and location will not limit future municipal projects including dredging or the future use of helical anchor moorings within Lewis Bay.

Port Improvements

Information previously provided by the proponent identifies the New Bedford Marine Commerce Terminal in New Bedford Massachusetts as the priority port to support the construction and operation of the proposed project. Several other areas in Massachusetts are identified as potential ports for where onshore infrastructure improvements and quay reinforcements are proposed. More detailed information regarding the work that would be required for these improvements and the associated resource area impacts should be provided. The analysis should also describe how these potential impacts could be avoided or minimized. Impacts to existing marine operations should also be described.

Monitoring Plan

A proposed monitoring framework should:

- Provide information on real-time cable installation effects (turbidity, sediment drape, physical disturbance) so that actual effects can be compared to anticipated effects;
- Provide information on construction impacts to biogenic habitats, benthic infauna, and/or fisheries resources;
- Provide information on the recovery times of various resources;
- Demonstrate the as-built cable condition to verify the appropriate depth of cable burial;
- Demonstrate that the cable remains adequately buried over the long-term.

Details of the monitoring framework should cover methods, time of year, frequency, locations, a mechanism for reporting results to agencies, and proposed standards for determining if burial is inadequate.

Ocean Development Mitigation Fee

Pursuant to the OMP and its regulations, the project is subject to an ocean development mitigation fee. Details on the ocean development mitigation fee are contained in the OMP (Chapter 3 and Appendix 6) and at 301 CMR 28.06. There was no information in the DEIR on the ocean development mitigation fee. Using the guidance and fee structure contained in the OMP, the proponent should evaluate their project and provide information and analysis to inform the determination of the fee. Based upon Vineyard Wind's preliminary estimates of area impacted by cable installation in State waters (45.8 acres for cable installation plus 47.1 acres for dredging through sand waves = 93.1 acres), the project would be categorized as a Class III activity (i.e., having a large footprint, greater than 20 acres, and moderate effects on habitat, natural resources, or water-dependent uses). Based on MEPA filings; comments received; the evaluation of the proposed project and its effects, public benefits, and other mitigation proposed; and other information, the Secretary will determine the fee in the final MEPA certificate.

Mitigation Initiatives

Vineyard Wind should provide more information on the three mitigation initiatives: the \$10 million Offshore Wind Energy Accelerator Fund, the \$2 million WindWard Workforce program, and the \$3 million for the Innovations for Marine Mammal Protection program.

Federal Consistency

The proposed project is subject to CZM federal consistency review. For further information on this process, please contact, Robert Boeri, Project Review Coordinator, at 617-626-1050 or visit the CZM web site at www.state.ma.us/czm/fcr.htm.

BKC/rlb/tc/sm

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