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MEMORANDUM

TO: Matthew A. Beaton, Secretary, EEA
ATTN: Purvi Patel, MEPA Unit
FROM: Bruce Carlisle, Director, CZM
DATE: January 30, 2018
RE: EEA-15787, Vineyard Wind Connector

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced Environmental Notification Form (ENF), noticed in the *Environmental Monitor* dated December 20, 2017, and offers the following comments for the development of a Draft Environmental Impact Report (DEIR).

Project Description

With this filing, Vineyard Wind proposes to install three (3) 10-inch diameter offshore export cables to connect a large-scale wind energy project located within 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 permit an up to 800-megawatt (MW) offshore project under the jurisdiction of the Bureau of Ocean Energy Management (BOEM). 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 proponent has indicated that the only portion of the project currently under state jurisdiction is the portion of offshore transmission cables in state waters. The ENF 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 1.2 miles 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 for the proposed cable route through Nantucket Sound include sections within the area of federal waters in the center of the sound. The cables are proposed to be buried approximately 4 to 6 feet below the seafloor.

The proponent estimates that dredged corridors through sand waves will be approximately 65 feet wide for each of the three cables. The ENF estimates that 4,054,000 square feet (sf) (92.0 acres) of Land Under Ocean within the Towns of Edgartown, Yarmouth, Barnstable, and possibly Nantucket and Mashpee will be affected, This value includes 1,995,840 sf (45.8 acres) of trenched cable pathway (6-foot wide swath) plus 2,051,676 sf (47.1 acres) of dredged cable pathway through sand waves (65-foot wide swath). The listed impacts appear to only be to resources in state waters.

The project requires an Order of Conditions under the Wetlands Protection Act, a Chapter 91 License, a 401 Water Quality Certificate, a Massachusetts Board of Underwater Archaeological Resources Special Use Permit, a Natural Heritage and Endangered Species Program Conservation and Management Permit, an Individual U.S. Army Corps of Engineers permit, CZM Federal Consistency review, and Development of Regional Impact Review by the Cape Cod Commission.

Project Comments

Jurisdiction

The Vineyard Wind project in its entirety is a large-scale offshore wind energy facility comprised of wind turbine generators, foundations, offshore cables, and offshore substations in federal waters and export marine and land-based cables and an onshore substation in state waters and land. The proposed facility would produce up to 800MW nameplate capacity annual renewable energy. The ENF filing covers the elements proposed within Massachusetts state boundaries, including most of the offshore export cables, all of the onshore underground cables, and the proposed onshore substation; these project elements are referred to collectively in the filing as the "Vineyard Wind Connector". The ENF states that Massachusetts reviews, including those by the Energy Facilities Siting Board and other state, regional, and local entities, will focus on the elements proposed within state boundaries. However, CZM's federal consistency authority extends to activities that have reasonably foreseeable effects on any coastal use or resources resulting from a federal agency activity or federal license or permit activity. Renewable energy leases and related authorizations by the Bureau of Ocean Energy Management (BOEM) are listed federal actions of the state's approved Coastal Management Program. While CZM's review of the entire project to ensure its consistency with policies of the Coastal Management Program will occur through the federal BOEM renewable energy program and National Environmental Policy Act filings, as detailed below, CZM requests that the proponent provide sufficient detail and information on activities in adjacent federal waters as well as potential effects on state resources and uses in subsequent MEPA filings to allow for a more complete assessment of the entire project through this MEPA process.

Massachusetts Ocean Management Plan

As the lead agency for the administration of the Ocean Management Plan (OMP) and its implementing regulations (301 CMR 28), an important focus of CZM's review of MEPA filings is the proposed project's conformance with the plan's siting and performance standards in the ocean planning area. Under the OMP, the siting standard for a cable infrastructure project requires the proponent to demonstrate that no less environmentally damaging alternative is practicable or 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 the public benefits of the project outweigh the potential detriments posed by impacts to SSU resources and that all practicable steps have been taken to avoid damage to the SSU resources and that there will be no significant alteration of the SSU resource values or interests.

As presented in the ENF, the SSU resources potentially impacted by the project are primarily areas of hard/complex seafloor, eelgrass, and Atlantic right whale core habitat. Areas of hard/complex seafloor are defined as: 1) areas of exposed bedrock or concentrations of boulder, cobble, or other similar hard bottom distinguished from surrounding unconsolidated sediments, 2) a morphologically rugged seafloor characterized by high variability in bathymetric aspect and gradient, or 3) man-made structures, such as artificial reefs, wrecks, or other functionally equivalent structures that provide additional suitable substrate for development of hard bottom biological communities. Maps of hard/complex seafloor were developed for the OMP using the best available data at the time. The resulting map "…is based upon the highest resolution data available, and a specific project may obtain higher resolution data for project planning purposes." Additional data collected by a project proponent may be required to confirm the presence or absence of an SSU resource and that certain projects may acquire the higher resolution data through site specific characterization.

Project Description and Survey Plan

The DEIR should include a complete description of the entire project, including all project elements (including a wind turbine array, offshore electrical service platforms, offshore transmission to shore, onshore underground transmission, and an onshore substation) and construction phases. It should include an existing conditions plan that clearly locates and delineates all resource areas based on site specific surveys conducted by the proponent including but not limited to eelgrass, shellfish, hard/complex bottom, intertidal flats, and rare and endangered species. It should also include an evaluation of water-dependent uses in state and federal waters, such as commercial and recreational fishing, shipping, and marine transportation. CZM requests that data on potential effects on resources and uses caused by the construction and operation of the project in both state and federal waters be presented in the DEIR.

The ENF states that a more detailed geophysical survey corresponding to the Western and Eastern Offshore Export Cable Corridors is planned for the spring/summer of 2018. The ENF describes two offshore export cable corridor alternatives (with variants) and three possible landfall alternatives. The DEIR should present detailed information and comparison of all routes evaluated as part of an alternatives analysis, including the Nantucket Offshore Export Cable Corridor. The proponent is seeking approval of both offshore export cable routes and has indicated a preferred landfall at New Hampshire Avenue in Yarmouth. Preliminary reconnaissance level geophysical and marine surveys were used to select these routes. The DEIR should also include details of what surveys and data collection were done prior to the filing of the ENF/DEIR. The data, analysis, and conclusions reached from these surveys, including the multi-beam, side scan sonar, sub-bottom profiling, vibracore sampling, benthic grab samples, and underwater video transects data should be included in the DEIR, along with the geophysical track lines surveyed. The DEIR should present a scope of work for a detailed survey and sampling plan that covers both proposed cable corridors. The impacts of the cable installation should be described in detail, along with a discussion of the predicted recovery time for any affected resources. This information should be updated as data is received and included in the DEIR and FEIR. Details of a post-construction survey, including video and acoustic assessments, over the buried cable should be included to document as-built conditions, to verify appropriate depth of burial, and to verify the estimated period of seafloor recovery. The proponent should commit to a comprehensive cable inspection program on a regular and as needed basis during the life time of the project to ensure adequate burial.

Export Transmission Cables

The ENF states that the Vineyard Wind Connector is being proposed for up to approximately 800 MW, which would either be constructed all at once or in two 400 MW phases. The full 800 MW Project would require up to three offshore export cables, which would transition to up to nine onshore transmission cables. If phased, the first 400 MW phase would be constructed under one of two scenarios: (1) one 400-MW offshore export cable transitioning to three onshore transmission cables; or (2) two 200-MW offshore export cables transitioning to six onshore transmission cables. The second phase would then be constructed with one 400-MW offshore export cable transitioning to three onshore transmission cables. In order to minimize impacts to resources and uses, transmission solutions that require fewer cables are strongly preferred. The DEIR should contain a comprehensive evaluation of the various export cable alternatives and a thorough justification of the preferred configuration proposed.

Water Quality

Installation of the offshore cables will have potential water quality impacts caused by both dredging and jetplow activities, including increases in total suspended solids. The impacts should be quantified, evaluated and presented in the DEIR, along with measures to be taken to minimized and avoided.

North Atlantic Right Whale and Humpback Whale Core Habitat and Species of Concern

Surveys over multiple years via fixed-wing aircraft, funded by the Massachusetts Clean Energy Center in conjunction with BOEM, as well as data from the OMP and the Northeast Ocean Data Portal show areas in or adjacent to the proposed project area that are utilized by several marine mammals, sea turtles, and sea birds. The distribution of these marine species is not limited to federal waters and their presence and distribution in the entire project area occurs in both state and federal waters. The following data should be evaluated, any potential impacts should be identified, and steps to avoid impacts to these species should be detailed in the DEIR:

- Area of high density of North Atlantic right whale sightings adjacent to the project footprint south of Muskeget Channel;
- Muskeget Channel is an area of high density observations for leatherback turtles, and loggerhead turtles were observed within the project footprint;
- Muskeget Channel is an area of high density observations for Common Tern, Long-tailed Duck, Northern Gannet, Razorbill, Roseate Tern, two loon species, and three species of scoters; and
- The Vineyard Wind lease area is habitat for the following marine birds: fulmars, Northern Gannet, Razorbill, several species of shearwater, and Wilson's Storm Petrel.

Hard/Complex Seafloor

The ENF states that in areas where no sand waves exist, cable installation impact is expected to be approximately six feet wide. Studies conducted during the installation of the Block Island Wind Farm cables demonstrated that cable impact occurred over an average width of 25 feet and as wide as 30 feet. Impact assessments presented in the DEIR should take this current, project-specific information into account and revised calculations should be presented. The proponent estimates that dredged corridors through sand waves will be approximately 65 feet wide for each of the three cables. The ENF states that sand waves up to 15 feet in height exist along the cable route and states that pre-cable laying dredging may be needed to ensure sufficient cable burial beneath the stable seabed. The sand waves should be mapped and identified relative to the proposed cable routes. The depth of sand wave dredging, the amount of sand waves to be removed, and the grain size of the material removed should be calculated and presented in the DEIR. The ENF states that there is gravel/cobble and shell lag in the troughs of the sand waves, constituting a "coarse lag surface". The sand waves and grain size variations provide habitat which may be impacted by the proposed dredging. An analysis of estimated impacts and area caused by the sidecasting of this material should be provided. The DEIR should provide an analysis of the estimated time it will take the sand waves to resume their pre-construction profile and a related assessment of the length of time for benthic community recovery to occur.

The proposal includes up to 122,919 cubic yards of dredging in state waters (up to 192,948 cubic yards in both state and federal waters) to ensure appropriate depth of burial in sand waves. The proponent believes this to be a conservative number and only includes estimates for state

waters. It is not clear if this estimate includes the volume of material displaced by the hydroplow. The DEIR should include a breakdown of how the potential dredge areas and volumes were calculated. This information should be described in the narrative and the dredge footprint should be shown in plan view. The ENF also states that any dredge material will be sidecast once removed from the trench, however it is unclear if this area was included in the footprint of project impact. This detail should be included in the DEIR narrative.

The ENF states that if cable burial is unsuccessful, it may be necessary to use concrete mats or riprap to protect the cables. CZM discourages the use of armoring due to the detrimental impacts which can include increased scouring of the seafloor adjacent to the mats or bags, increasing substrate providing a vector for invasive species colonization, and impacts to commercial and recreational fishing operations. As an alternative, the DEIR should assess whether other means of cable installation such as hand jetting could be implemented to avoid the need for armoring. The DEIR should include analysis to characterize the wave dynamics, currents, and sediment transport along the proposed cable routes, particularly in areas of sand waves, to better understand whether the proposed depth of burial is sufficient and avoid the potential use of armoring.

The ENF also states that no impacts to specified resource areas are anticipated from dredging because it is expected to be limited to offshore areas away from intertidal zones, outstanding resource waters, and eelgrass beds. However, several species of bottom dwelling organisms, including surf clams, bay scallop, razor clams, channeled whelk, knobbed whelk, horseshoe crabs, and blue mussels exist in offshore areas. These resources should be identified and mapped and discussions should take place between the proponent, the Massachusetts Division of Marine Fisheries (DMF), and the National Marine Fisheries Service (NMFS) to avoid and minimize any possible impacts.

Vessel Positioning Methodology for Cable Installation

The ENF does not specify whether the vessels used in laying the offshore export cables will utilize dynamic positioning, anchor and kedge positioning, or stationary spud-anchored vessels. The use of an anchor and kedge system or stationary spud anchored vessels have the potential to increase impacted areas due to the presence of the anchor cable sweep or spud "footprints". CZM strongly recommends the use of dynamically positioned vessels to avoid these impacts. The DEIR should include a detailed anchoring plan for all vessels conducting and supporting the project. The anchoring plan should include the locations of all sensitive resources (including hard bottom and eelgrass) and how the proponent intends to avoid impacts due to anchor strike and anchor sweep. All vessel captains should be made aware of the anchoring plan and it should be required to be posted on all vessels associated with the project.

Eelgrass

The ENF states that the Massachusetts Department of Environmental Protection (MassDEP) maps were used to determine where eelgrass resources are present near the entrance to Lewis Bay in Yarmouth. More detailed, site specific mapping of present day eelgrass beds should be conducted in consultation with MassDEP, DMF, and NMFS and presented in the DEIR. As indicated in the OMP, the proponent must make every effort to avoid any eelgrass present in the proposed route.

Cable Landfall Installation

The ENF describes two methodologies for construction of the offshore cable to make landfall at the cable landings and connect to landside transmission cable system: horizontal directional drilling (HDD) and open-trench installation. The DEIR should provide detailed assessment of both methods and provide an evaluation and rationale for the preferred landfall method.

Fisheries Resources

The ENF states that there will be temporary impacts to shellfish, however it does not indicate what surveys were done to establish this, nor does it identify where these impacts are expected to occur. If site specific surveys have not been conducted, these should be included in the next phase of surveys. A shellfish survey plan should be prepared after consultation with DMF and NMFS and presented in the DEIR.

DMF Resource Assessment Trawl, Vessel Monitoring System, and other data sources indicate fisheries resources and several commercial fisheries uses that occur within or adjacent to the Vineyard Wind project. Potential impacts to these fisheries and practices/approaches to avoid, minimize and mitigate adverse effects should be addressed in the DEIR:

- Sectors including otter trawling, gill netting, midwater trawling, and both the fish and whelk pot fisheries use waters within or adjacent to the project area;
- Vessels targeting the following fisheries occurred at high densities in or adjacent to the project area: American eel, bluefish, blueline tilefish, horseshoe crab, smooth dogfish, southern kingfish, summer flounder/scup/black sea bass, tautog, and channeled and knobbed whelk;
- Other species caught adjacent to the project area under specific Fisheries Management Plans include: cusk, smooth and spiny dogfish, ocean quahog/surf clam, sea scallop, monkfish, sea robins, skates, squid/ mackerel/ butterfish, north east multispecies, north east small mesh multispecies;
- Vessels using ports in the following coastal communities were documented fishing within or adjacent to the project area: Barnstable, Boston, Chatham, Dennis, Fairhaven, Falmouth, Gloucester, Harwich, Nantucket, New Bedford, Plymouth, and Provincetown.

Other Water-Dependent Uses

The Northeast Ocean Data Portal also contains mapped marine vessel use data representing several coastal use sectors that could potentially be affected by the Vineyard Wind project. The DEIR should discuss potential impacts and avoidance measures to these sectors:

- Commercial marine transportation traffic: maps show high densities of passenger vessels and Tug/Tow transiting from Massachusetts ports through the project area;
- Recreational boating: maps depict high density use from Massachusetts ports within the project area;
- Aquaculture: there is a mussel culture area and a kelp culture area near or potentially within the project area.

Project Vessel Traffic

The proposed project will generate a significant amount of marine vessel traffic. The DEIR should describe the various vessels, activities, ports, and measures planned to provide sufficient notice to mariners and specifically to commercial fishermen, as well as best practices for ensuring safe navigation on the water and in port.

No Discharge Zone

As all of Massachusetts waters are designated a No Discharge Zone, the DEIR should describe how all vessels associated with the project will be equipped, and how all captains and contractor will comply with no discharge regulations.

Ocean Development Mitigation Fee

Pursuant to the OMP and its regulations, the project is subject to an Ocean Development Mitigation Fee. The amount of the ocean development mitigation fee will be established by the Secretary through the MEPA process. The OMP contains language and guidance as to the process and framework for determining the fee. The information and analysis contained in the Draft and Final EIRs, as well as consultation with agencies and input from public comment, will inform the Secretary's determination of the mitigation. Also an accurate assessment of the total square footage of impacts related to the project will be necessary to determine the mitigation fee. The fee will be deposited in the Oceans Resources and Waterways Trust as mitigation to compensate the Commonwealth for unavoidable impacts, even if minor and temporary, on the broad public interests and rights in the lands, waters, and resources of the OMP.

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/rh/sm

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