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Martha's Vineyard Commission

DRI # 688 Vineyard Wind Transmission Cable
MVC Staff Report – 2019-02-21

1. DESCRIPTION

1.1 **Applicant:** Vineyard Wind, LLC; Richard Andrade, Eric Peckar (Vineyard Power Cooperative); Kate McEneaney (Epsilon Associates); Rachel Pachter and Nate Mayo (Vineyard Wind).

1.2 **Project Location:** The proposed cables would run more or less north-south for 12.4 or 13.7 miles below Edgartown waters approximately 1.2 miles offshore.

1.3 **Proposal:** The proposal is to install two 220-kW export cables underneath the sea floor in two trenches that will pass approximately 1.2 miles offshore of Edgartown for either 12.4 or 13.7 miles (through the Edgartown waters stretch) using hydro-plow or mechanical plow installation methods. Plans show two possible routes but only one is proposed to be installed.

1.4 **Zoning:** The project is offshore where there is no zoning. The area where the Wind Farm is proposed was designated a Wind Lease Area by the Bureau of Ocean Energy Management (BOEM).

1.5 **Local Permits:** The project will be reviewed locally by the Edg. Conservation Commission and the MVC. The Applicant has said they will conduct conversations with the Wampanoag Tribe.
Other permits and reviews: National Environmental Policy Act (NEPA) Environmental Impact Statement (EIS) is being conducted by the Department of the Interior's Bureau of Ocean Energy Management (BOEM). The Draft Environmental Impact Statement (DEIS) was released on December 7, 2018, triggering a 45-day public and agency review period (https://www.boem.gov/Vineyard-Wind/) and is also at the Edgartown and Chilmark Public Libraries. BOEM has scheduled a series of public meetings on the DEIS in January of 2019. A meeting will be held in Vineyard Haven on January 17, 2019. A similar Massachusetts State review pertaining to the state portions of the project is being conducted at the state level. A Final Environmental Impact Report was submitted on December 15th to the Massachusetts Environmental Protection Act (MEPA) office. Other reviewing agencies include the Army Corps of Engineers (ACE), National Marine Fisheries Service (NMFS), Federal Aviation Administration (FAA), United State Coast Guard (USCG), the Massachusetts Energy Facilities Siting Board, Dept. of Environmental Protection (DEP) and Office of Coastal Zone Management (CZM).

1.6 **Surrounding Land Uses:** Muskeget Channel, Northern Right Whale Core Habitat, Shell Fish Areas,

1.7 **Project History:** This is part of the first large scale offshore wind farm in the United States.

1.8 **Project Summary:** The cables are an element of the larger Vineyard Wind project that will transmit energy generated at a wind turbine array proposed on a 160,000 acre lease area in federal waters over 14 miles south of Martha's Vineyard and traverse from the Atlantic Ocean through Muskeget Channel to Nantucket Sound and connect to the electrical grid via a landfall in Barnstable.

- At their closest point the proposed undersea cables will be approximately 1.2 miles from Edgartown and run more or less north-south below Edgartown waters through Muskeget Channel.
- Two possible routes are still under consideration though only one will be constructed:
  - The possible western route is approximately 13.7 miles through Edgartown waters;
  - The possible eastern route is approximately 12.4 miles through Edgartown waters.
- The trench will be less than one meter wide except where dredging is required.
- In some locations "armoring" may be required which entails concrete mattresses (10' wide) laid on top to keep the cable in place where the seafloor is so dynamic that the cable requires weighting.
- According to the FEIR dated December 17, 2018 "the Company assumes that up to 10% of the cables may require protection and that their engineers have been able to reduce the width of any cable protection from ~30 feet to ~10 feet. This refinement allows the extent of armoring to be reduced from 27 acres to 9 acres in state waters only".

- According to the FEIR dated December 17, 2018 for Commercial Fisheries and For-Hire Recreational Fishing BOEM expects "moderate long-term impacts on target populations or locations, loss or damage of gear, and the cumulative impact of other offshore developments. Overall, with mitigation, BOEM expects the proposed- Project activities (including construction, installation, and operations) would have a minor to moderate effect on commercial fisheries and for-hire recreational fishing".
- The Cable will include three copper or aluminum conductors, with each conductor encapsulated by solid cross-linked polyethylene (XLPE) insulation. The cables will contain no fluids.
- Cable installation will occur at an approximate rate of 150-200 meters per hour (under 1 knot) and is expected to take approximately two weeks to lay each cable through Edgartown waters.
- The Applicant has said they have sited activity to avoid and/or minimize impacts to sensitive areas and say they will entirely avoid eelgrass beds and core habitat for the North Atlantic Right Whale.
- Techniques such as Passive Acoustic Monitoring (PAM) and aerial or vessel based visual observers will be used for development of the larger wind farm. Some PAM may occur with the crew transfer vessels.
- Vineyard Wind reports they have established a $3 million "Marine Mammal Innovation" fund to advance development of innovative methods and technologies to protect marine mammals as the industry grows.
- Vineyard Wind has developed a Fisheries Communication Plan and is working with University of Massachusetts Dartmouth School for Marine Science and Technology (SMAST) to design pre- and post-surveys of fisheries resources to assess any effect of wind farm development on fisheries resources. MVC has received no correspondence from fishing groups yet.
- Vineyard Wind submitted (January 28, 2019) a twelve (12) page agreement co-signed by Vineyard Wind, the National Wildlife Federation, the Natural Resources Defense Council and the Conservation Law Foundation outlining efforts to protect the critically endangered Northern Right Whale during the pile-driving phase of construction for the wind turbines. The "agreement" includes less protection for activities before the Commission at this time such as trenching, installation and crew transfer vessels.
- Phase One of the wind turbine array (Wind Farm) in Federal Waters is expected to include 84 turbines over 600 feet tall and spaced about 8/10 of a mile apart with each turbine capable of generating over 9.5 MW generating for a total of about 800 MW a year. Power would be collected at an offshore substation then transmitted almost 50 miles (12-13 through Vineyard waters) to Barnstable.
- According to the Final Environmental Impact Report (FEIR) dated December 17, 2018 Vineyard Wind selected MHI Vestas Offshore Wind as the preferred supplier for the Project. MHI Vestas will supply the V1 64 9.5 MW, which is the largest wind turbine generator currently available.
- According to the MHI Vestas Offshore Wind website the MHI Vestas V1 64 9.5 MW offshore wind turbines have 80 meter long blades (262.5 feet), an approximate hub height of 105 meters (344.5 feet), and an approximate tip height of 187 meters (613.5 feet) tall.
- The MVC reviewed DRI 641 for the Comcast/NSTAR Hybrid Undersea Cable which was a 4 .5 mile long undersea hybrid fiber optic and electric cable from Falmouth to Martha's Vineyard to supply both power and fiber-optic cable capability sized to supply 25 MVA at 25 kV and replace what was lost when Cable #75 failed. The amount of electricity transmitted through the existing 4.5 mile cable is significantly less than the 800 MW (400 MW each cable) for 50 miles that is proposed now.

2. ADMINISTRATIVE SUMMARY

2.1 **DRI Referral:** January 3, 2019 from Edgartown Conservation Commission
2.2 **DRI Trigger:** 5.1c (Development in the Ocean)
2.3 **Pre-Application meeting with staff**: November 28, 2018; January 3, 2019.
2.4 **LUPC:** January 28, 2019
2.5 **Public Hearing:** February 21, 2019. Continued to March 21, 2019.

3. PLANNING CONCERNS

3.1 Some Key Issues

- **Habitat**: How will the installation and existence of the undersea cable carrying 800 Megawatts for 50 miles affect fish stocks and other migratory species that pass over the cable throughout this area? "BOEM expects the proposed- Project activities (including construction, installation, and operations) would have a minor to moderate effect on commercial fisheries and for-hire recreational fishing"
- **Habitat**: Are there any long term affects to the sea bottom?
- **Protection of the Northern Right Whale**: The Applicant has agreed to measures to safeguard the Northern Right Whale, which is threatened with extinction, during the pile driving required for the installation of the wind turbines. Cable installation protections include restricting the crew transfer vessels to under 10 knots from November 1 through May 14 (except Nantucket Sound) unless there is at least one observer. Are the safeguards for preventing vessel strikes with this threatened species enough?
- **Archaeology**: What conversations has the applicant had with the Wampanoag Tribe of Aquinnah?
- **Dredging**: The trench will generally be less than one meter wide except where dredging is required. However, surveys of the sea bottom supplied by the Applicant indicate that about half of the sea bottom through Edgartown waters is either "Hard Bottom" or "Complex Sea Floor".
- **Cable Security**: Page 11 of the The DRI Application document states that "periodic maintenance surveys will be conducted routinely to ensure proper burial depth" of the cables is maintained. How often and how will the Applicant monitor the cable?
- **Jurisdiction:** The Commission has been referred the undersea cables beneath the sea floor in Edgartown waters. How was/is the Vineyard Community being informed and incorporated into the review of the larger Wind Farm project?
- **Visibility**: The DRI Review is for the laying of cable beneath the sea floor in Edgartown waters. The Wind Farm itself begins 14 miles off the southern Martha's Vineyard shore in Federal Waters. The Wind Turbines will be clearly visible from the south shore of Martha's Vineyard during the day and flashing lights at night. Were there any visibility studies done when creating this as the Federal Wind Lease Area?
- **Electric Fields/Magnetic Fields**: Staff does not have the information or data to assess these areas.
- **Segmentation**: If approved, will the offers and conditions established on this DRI Review of the cable within Edgartown waters apply to the rest of the cable outside of Vineyard waters transmitting energy generated at the wind farm to the mainland?

3.2 Environment

- **Vegetation:** The Applicant is avoiding any eel grass beds.
- **Habitat:** The area is mapped as NHESP Habitat for State Listed Rare Species. The Company is "consulting" with NHESP. The Cables wrap around and very close to Core Habitat of the Northern Right Whale. The Cables will go through several areas mapped as shellfish areas and will go through habitat for the Blue Mussel and the Sea Clam. The Applicant states: "that electric fields are effectively blocked by the sediments in which the cables will be buried, so only magnetic fields" were discussed.
- **Archaeology:** Applicant has said they have had active conversations with the Wampanoag Tribe.
- **Lighting:** The Turbines at the Wind Farm will have lights seen from the Vineyard.
- **Noise:**
- **Construction Schedule**: The Applicant hopes to begin installing the cable in early 2021.
- **Energy/Sustainability:** The project is being done to create renewable energy. The first phase aims to generate 800 MW a year of renewable energy, enough to power 400,000 homes.