

Vineyard Northeast Project

Project Design Envelope

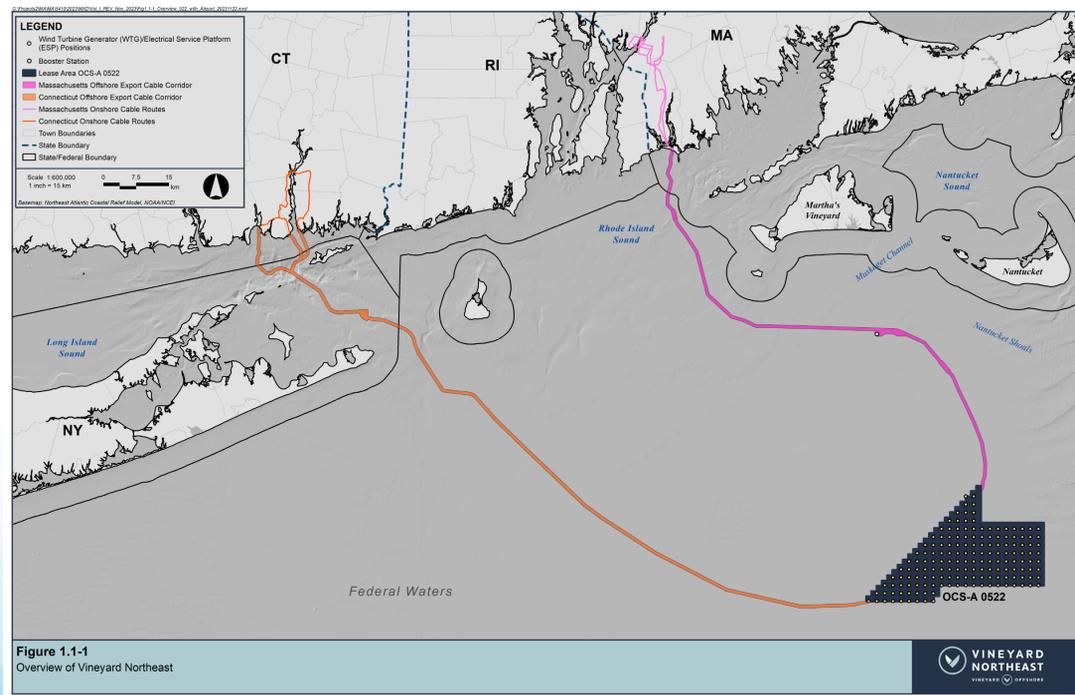
Project Description

On November 30, 2023, Vineyard Northeast, LLC, submitted a revised construction and operations plan (COP) for the Vineyard Northeast offshore wind farm and export cable project (the Project). The Project would consist of the following:

- Up to 160 wind turbine generators (WTGs) with a capacity to generate up to 2,600 megawatts (MW) of offshore wind energy
- A network of offshore inter-array cables measuring up to 192 nautical miles (NM) in total length
- Up to three offshore electrical service platforms (ESPs) connected by up to 65 NM of inter-link cable
- Up to two offshore export cables measuring up to 462 NM in combined length (Connecticut = 227 NM, Massachusetts = 235 NM)
- Up to two onshore landing sites (one in Connecticut, one in Massachusetts)
- Up to two onshore transmission cables measuring between 13 and 14 miles long in Connecticut and between 19 and 24 miles long in Massachusetts
- Up to two onshore substations (one in Connecticut, one in Massachusetts)
- An onshore logistics or operations and maintenance (O&M) facility

At its closest point, the Lease Area is approximately 29 miles south of Nantucket Island, Massachusetts, in federal waters. The two offshore export cables would be installed within two offshore export cable corridors (OECs)—the Connecticut OEC and the Massachusetts OEC—that connect to onshore transmission systems in Connecticut and Massachusetts.

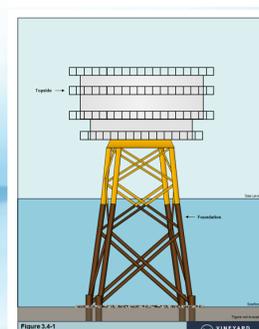
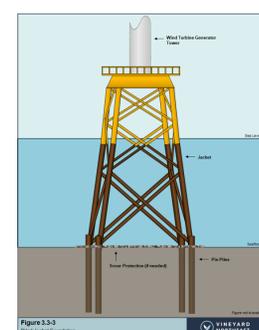
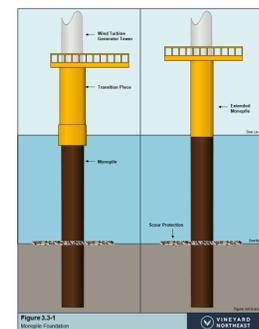
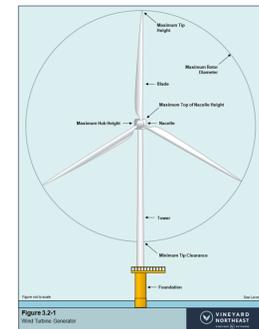
The Connecticut OEC travels from the southwestern tip of the Lease Area along the southwestern edge of the Massachusetts Wind Energy Area (MA WEA) and then heads between Block Island and the tip of Long Island toward potential landfall sites near New London, Connecticut. The Massachusetts OEC travels from the northernmost tip of the Lease Area along the northeastern edge of the MA WEA and Rhode Island/Massachusetts Wind Energy Area (RI/MA WEA) and then heads across Buzzards Bay toward the Horseneck Beach Landfall Site in Westport, Massachusetts.



Definition

A project design envelope (PDE) approach is a permitting approach that allows a project proponent the option to submit a reasonable range of design parameters within its permit application, allows a permitting agency to then analyze the maximum impacts that could occur from the range of design parameters, and may result in the approval of a project that is constructed within that range.

Project Component	Project Envelope Characteristics
Foundations	<ul style="list-style-type: none"> • Foundations for the WTGs would be monopiles or piled jackets • Maximum of 160 foundations • Scour protection would be installed around the foundations
WTGs	<ul style="list-style-type: none"> • Up to 160 WTGs • Rotor diameter up to 1,050 feet (320 meters) • Hub height up to 787 feet (240 meters) above mean lower low water (MLLW) • Maximum tip height up to 1,312 feet (400 meters) MLLW • Minimum tip clearance 89 feet (27 meters) MLLW • Positioned in a 1 x 1-NM grid
Inter-array cables and inter-link cable	<ul style="list-style-type: none"> • Inter-array cable (cables connecting WTGs to ESPs): <ul style="list-style-type: none"> » Maximum total cable length 192 NM (356 kilometers) » 66- to 132-kilovolt (kV) high-voltage alternating current (HVAC) cables (high-voltage direct current [HVDC] cables may be used if the technology becomes available) • Inter-link cable (cable between ESPs): <ul style="list-style-type: none"> » Maximum total cable length 65 NM (120 kilometers) » 66- to 525-kV HVAC or HVDC • Cables buried up to 5 to 8 feet (1.5–2.5 meters) beneath the seabed, maximum depth 10 feet (3 meters) • If target cable burial depth is not achieved, proposed cable protection includes rock armor, rock bags, concrete mattresses, and protective half-shells
Offshore export cables	<ul style="list-style-type: none"> • Two OECs: Connecticut OEC and Massachusetts OEC <ul style="list-style-type: none"> » Connecticut OEC: maximum total cable length 227 NM (421 kilometers) » Massachusetts OEC: maximum total cable length 235 NM (436 kilometers) • If HVDC technology is used: <ul style="list-style-type: none"> » 320- to 525-kV HVDC cables » 2 HVDC cables for Connecticut OEC » 2 HVDC cables for Massachusetts OEC » Total of 4 HVDC cables • If HVDC and HVAC technology is used: <ul style="list-style-type: none"> » 320- to 525-kV HVDC cables » 220- to 345-kV HVAC cables » 2 HVDC cables for Connecticut OEC » 3 HVAC cables for Massachusetts OEC with 1 booster station » Total of 2 HVDC cables and 3 HVAC cables • Target burial depth and cable protection options are the same as inter-array cables and inter-link cables
Meteorological oceanographic (metocean) buoys and other buoys	<ul style="list-style-type: none"> • One or more temporarily deployed metocean buoy(s) in up to 50 locations within the Lease Area during construction • Temporary safety marker buoys in up to 10 locations with the Lease Area during construction • One or more temporarily deployed mooring buoy(s) in the Lease Area during construction
Electrical service platforms and booster station	<ul style="list-style-type: none"> • Up to 3 ESP and up to 1 booster station • The ESPs may have dedicated foundations or the ESP equipment may be integrated onto one or more WTG foundation(s) • The booster station would have a dedicated foundation and would be located in BOEM Lease Area OCS-A 0534 • 1 booster station, maximum; only applicable if HVAC is used • Positioned along the same 1 x 1-NM grid as the WTGs • The foundations for ESPs and the booster station would be monopile or piled jacket
Onshore facilities	<p>Connecticut Landfall</p> <ul style="list-style-type: none"> • Onshore transmission cables would connect the Connecticut landfall site (at Ocean Beach, Eastern Point Beach, or Niantic Beach) to a new onshore substation (location to be selected) • Grid interconnection cables would connect the onshore substation to one of three potential points of interconnection (POIs) to the existing electrical transmission grid • Onshore transmission cables in Connecticut will be 320- to 525-kV HVDC cables <p>Massachusetts Landfall</p> <ul style="list-style-type: none"> • Onshore transmission cables would connect the Massachusetts landfall site (at Horseneck Beach) to a new onshore substation (location to be selected) • Grid interconnection cables would connect the onshore substation to one of three potential POIs to the existing electrical transmission grid • Onshore transmission cables in Massachusetts could be HVDC or HVAC cables • HVDC onshore transmission cables would be the same as Connecticut (320- to 525-kV HVDC cables) • HVAC onshore transmission cables would be 220 to 345 kV and HVAC interconnection cables would be 115 to 345 kV
Operations and maintenance facilities	<ul style="list-style-type: none"> • One or more onshore O&M facilities at or near any of the 17 ports identified in the COP and located in Massachusetts, Rhode Island, Connecticut, New York, and New Jersey • O&M facilities are expected to include dock space for support vessels



For more information on the proposed project, see the construction and operations plan available at: <https://www.boem.gov/renewable-energy/state-activities/vineyard-northeast>

Learn more about the project design envelope at: www.boem.gov/Draft-Design-Envelope-Guidance/



Vineyard Northeast COP, Epsilon 2023.