Appendix D
Geographical Analysis Areas

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Abbreviations and Acronyms

BOEM	Bureau of Ocean Energy Management
EIS	Environmental Impact Statement
LME	large marine ecosystem
OECC	offshore export cable corridor
OECR	onshore export cable route
RI/MA Lease Areas	Rhode Island and Massachusetts Lease Areas
SWDA	Southern Wind Development Area
WTG	wind turbine generator

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D Geographical Analysis Areas

Each resource has a geographic distribution and area in which proposed Project impacts would be felt. This appendix describes the geographic analysis area for each resource evaluated in the Draft Environmental Impact Statement (Table D-1).

Table D-1: Resource-Specific Geographic Analysis Areas

Resource	Geographic Analysis Area
Air Quality	The geographic analysis area for air quality includes the airshed within 15.5 miles of the SWDA, OECC, OECR, substation sites, and ports potentially used for construction or operations. Given the generally low emissions of the sea vessels and equipment that would be used during proposed construction activities, any potential air quality impacts would likely be within a few miles of the source. BOEM selected the 15.5-mile distance to provide a reasonable buffer.
Water Quality	The offshore geographic analysis area for water quality extends for a 10-mile radius around the SWDA, the OECC, and vessel approach routes to port facilities that would be used by the proposed Project. This area accounts for some transport of water masses due to ocean currents. Onshore, the water quality geographic analysis area includes the proposed Project footprint and surrounding areas.
Bats	While some historic, anecdotal observations of bats up to 1,212 miles offshore of North America exist, recent offshore observations of tree bats range from 10.5 to 26 miles (Hatch et al. 2013). As such, the geographic analysis area for bats encompasses more than 193 million acres and includes the U.S. East Coast, from Maine to Florida, to capture migratory species and extends 100 miles offshore and 5 miles inland to capture the migratory movements of most species in this group. Cave bats do not typically occur on the Outer Continental Shelf. Tree bats are long-distance migrants whose ranges include the majority of the Atlantic coast from Florida to Maine. While these species have been documented traversing the open ocean and have the potential to encounter WTGs, use of offshore habitat is thought to be limited and generally restricted to spring and fall migration. The onshore limit of the geographic scope is intended to cover a majority of the onshore habitat use by those species that may encounter the proposed Project during the majority of their life cycle.
Benthic Resources	The geographic analysis area for benthic resources extends for a 10-mile radius around the SWDA and the OECC. This area is based on where the most widespread impact (namely, suspended sediment) from the proposed Project could affect benthic resources. While sediment transport beyond this radius is possible, sediment transport related to the proposed activities is likely to remain within this area, according to the results of the model presented in the Construction and Operations Plan (Appendix III-A; Epsilon 2022). Highly mobile benthic animals and planktonic life stages of otherwise benthic organisms may be affected by activities outside of this area and are, therefore, considered among the resources discussed in the Environmental Impact Statement.
Birds	The geographic analysis area for birds encompasses more than 193 million acres and includes the U.S. East Coast, from Maine to Florida, covering migratory species that may encounter the proposed Project and use habitats along these states. The offshore limit is 100 miles from the Atlantic shore to capture the migratory movements of most species in this group. The onshore limit is 0.5 mile inland to cover onshore habitats used by the species that may be affected by offshore components of the proposed Project, as well as those species that could be affected by proposed onshore Project components.
Coastal Habitats and Fauna	The geographic analysis area for coastal habitats and fauna is defined as all lands and waters that are within a 1-mile buffer of the OECC and fall within the 3-nautical-mile (3.5-mile) seaward limit of Massachusetts' territorial sea to 100 feet landward of the first major land transportation route encountered (a road, highway, rail line, etc.).

Resource	Geographic Analysis Area
Finfish, Invertebrates, and Essential Fish Habitat	The geographic analysis area for finfish, invertebrates, and essential fish habitat is the southern New England sub-region of the Northeast Shelf LME, which is likely to capture the majority of the movement range for most species in this group. The geographic analysis area extends from the southern edge of the Scotian Shelf (in the Gulf of Maine) to Cape Hatteras, North Carolina.
Marine Mammals	The geographic analysis area for marine mammals encompasses more than 384 million acres and includes the Scotian Shelf, Northeast Shelf, and Southeast Shelf LMEs, which are likely to capture the majority of the movement range for most species in this group. LMEs are delineated based on ecological criteria including bathymetry, hydrography, productivity, and trophic relationships among populations of marine species, and the National Oceanic and Atmospheric Administration uses them as the basis for ecosystem-based management. The Northeast Shelf LME extends from the southern edge of the Scotian Shelf (in the Gulf of Maine) to Cape Hatteras, North Carolina, and the Southeast Shelf LME extends from the Straits of Florida to Cape Hatteras, North Carolina. These LMEs extend from the coastline offshore to the shelf break (at a depth of approximately 328 to 656 feet).
Sea Turtles	The geographic analysis area for sea turtles encompasses nearly 241 million acres and includes the Scotian Shelf, Northeast Shelf, and Southeast Shelf LMEs, which are likely to capture the majority of the movement range within U.S. waters for most species in this group. LMEs are delineated based on ecological criteria including bathymetry, hydrography, productivity, and trophic relationships among populations of marine species, and the National Oceanic and Atmospheric Administration uses them as the basis for ecosystem-based management. The Northeast Shelf LME extends from the southern edge of the Scotian Shelf (in the Gulf of Maine) to Cape Hatteras, North Carolina, and the Southeast Shelf LME extends from the Straits of Florida to Cape Hatteras, North Carolina. These LMEs extend from the coastline offshore to the shelf break (at a depth of approximately 328 to 656 feet). The geographic analysis area of nesting for all turtle species ranges from North Carolina southward.
Terrestrial Habitats and Fauna	The geographic analysis area for terrestrial habitats and fauna is defined as all land areas that would be disturbed by the proposed Project, plus a 0.5-mile buffer. This discussion of terrestrial habitats and fauna does not include bats, which are discussed separately under EIS Section G.2.3, Bats, or coastal and marine birds, which are discussed separately under EIS Section G.2.4, Birds.
Wetlands and Other Waters of the United States	The geographic analysis area for wetlands and other waters of the U.S. includes onshore development areas within the Cape Cod watershed (hydrologic unit code 0109000202), as well as open ocean areas within the U.S. Army Corps of Engineers' jurisdiction. Under Section 404 of the Clean Water Act, the USACE regulates the discharge of dredged or fill material into waters of the U.S. The limits of USACE jurisdiction in non-tidal waters (33 CFR § 328.4) are as follows: • In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark; or when adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands. • When the waters of the U.S. consist only of wetlands, the jurisdiction extends to the limit of the wetland. In addition, under Section 10 of the Rivers and Harbors Act of 1899, the USACE regulates construction of any structure and work that are located in or that affect "navigable waters of the U.S." from the mean high water mark to the seaward limit of the Outer Continental Shelf (43 USC 1333[e] and 33 CFR 320.2). To avoid duplication of analysis, the evaluation of impacts on wetlands and waters of the U.S. focuses only on non-tidal waters and wetlands. Impacts on tidal waters and wetlands, including all U.S. Army Corps of Engineers jurisdictional waters and wetlands from the high tide line to the 3-nautical-mile (3.5-mile) limit of territorial seas are discussed in EIS Section 3.5, Coastal Habitats and Fauna. Existing conditions and impacts for open waters from the limits of territorial seas to the edge of the U.S. exclusive economic zone are discussed in EIS Section G.2.2, Water Quality, as well as other resource sections related to open water environments.
Commercial Fisheries and For-Hire Recreational Fishing	The geographic analysis area for commercial fisheries and for-hire recreational fishing encompasses nearly 199 million acres The area is the boundary of the management area of the New England Fishery Management Council and the Mid-Atlantic Fishery Management Council for all federal fisheries within the U.S. exclusive economic zone (from 3 to 200 nautical miles [3.5 to 230 miles] from the coastline) through Cape Hatteras, North Carolina, plus the state waters of the Commonwealth of Massachusetts (from 0 to 3 nautical miles [0 to 3.5 miles] from the coastline). For an analysis of private recreational fishing, see EIS Section 3.15, Recreation and Tourism.

Resource	Geographic Analysis Area
Cultural Resources	The geographic analysis area for cultural resources consists of the direct and indirect areas of potential effect, as well as the locations of known or planned future offshore wind development off the coast of Cape Cod, Nantucket, and Martha's Vineyard. For visually affected cultural resources, the geographic analysis area is limited to the viewshed area of intervisibility for the proposed Project and other future offshore wind projects within the geographic analysis area for cultural resources. For all other cultural resources, the geographic analysis area is limited to the proposed Project's terrestrial land and seafloor disturbance. As a result, the geographic analysis area for cultural resources is defined as follows: • The depth and breadth of the seabed potentially affected by any bottom-disturbing activities associated with the construction, including, but not limited to, the WTGs, offshore export cables, and support facilities, as well as areas that could be impacted by associated activities such as dredging, deploying and moving vessel anchors, and temporary or permanent construction or staging areas; • The depth and breadth of terrestrial areas potentially affected by ground-disturbing activities associated with construction of onshore infrastructure such as export cables, transmission lines, electrical substations, port expansions, and temporary or permanent construction or staging areas; and • The area of intervisibility between the viewshed from which structures from the proposed Project would be visible and the viewshed from which structures would be visible from planned offshore wind developments. The analysis of cumulative visual impacts is applied only to those historic properties that are adversely affected by the proposed Project and that have a view of other planned offshore wind developments.
Demographics, Employment, and Economics	The geographic analysis area for demographics, employment, and economics includes the counties where proposed onshore infrastructure and potential port cities are located, as well as the counties in closest proximity to the SWDA (Barnstable, Bristol, Dukes, and Nantucket counties, Massachusetts; and Providence and Washington counties, Rhode Island). These counties are the most likely to experience beneficial or adverse economic impacts from the proposed Project.
Environmental Justice	The geographic analysis area for environmental justice includes the counties where proposed onshore infrastructure and potential port cities are located, as well as counties in closest proximity to the SWDA (Barnstable, Bristol, Dukes, and Nantucket counties, Massachusetts; and Providence and Washington counties, Rhode Island). These counties, and environmental justice communities located within them, are the most likely to experience economic impacts from the proposed Project.
Land Use and Coastal Infrastructure	The geographic analysis area for land use and coastal infrastructure includes Barnstable and Bristol counties, as well as counties containing ports potentially used for the proposed Project's construction, operations, and decommissioning. These areas encompass more than 5.6 million acres in locations where direct and indirect impacts associated with proposed onshore facilities and ports would occur.
Navigation and Vessel Traffic	The geographic analysis area for navigation and vessel traffic extends for a 7.5-mile radius around the SWDA, the OECC, and vessel approach routes to the ports of New Bedford, Montauk, and Brayton Point in Bristol County, Massachusetts; Port of Providence in Providence County, Rhode Island; and the Port of Davisville (Quonset Point) in Washington County, Rhode Island. These ports have been identified as suitable to support the offshore wind industry in Massachusetts and Rhode Island.
Other Uses	The geographic analysis area for other uses (national security and military use, aviation and air traffic, offshore cables and pipelines, radar systems, scientific research and surveys, and marine minerals) is described below. BOEM is not analyzing the impacts of future offshore wind energy on marine minerals extraction because the proposed Project would have no impacts on marine minerals extraction and could not contribute to cumulative impacts on marine minerals extraction. In addition, BOEM assumes that export cables associated with future offshore wind projects within the RI/MA Lease Areas would avoid identified borrow areas because BOEM would consult with the BOEM Marine Minerals Program and the U.S. Army Corps of Engineers before approving offshore wind cable routes, avoiding impacts on known borrow areas. **Military and national security uses**: The geographic analysis area includes airspace, surface, and submarine areas that are used by regional military entities in an area roughly bounded by Montauk, New York; Providence, Rhode Island; Provincetown, Massachusetts; and within a 10-mile buffer from the RI/MA Lease Areas. **Aviation and air traffic:** The geographic analysis area includes airspace and airports used by regional air traffic, generally an area roughly bounded by Montauk, New York; Providence, Rhode Island; Provincetown, Massachusetts; and within a 10-mile buffer from wind lease areas in the RI/MA Lease Areas.

Resource	Geographic Analysis Area
	Offshore energy: The geographic analysis area includes the nine active offshore RI/MA Lease Areas. BOEM is not analyzing the impacts of future offshore wind energy on offshore energy but is analyzing the impact of the proposed Project on offshore energy. Therefore, the analysis of these impacts is limited to sections on the proposed Project. **Cables and pipelines:** The geographic analysis area includes areas within 1 mile of the OECC and SWDA and the RI/MA Lease Areas that could affect future siting or operation of cables and pipelines. **Radar systems:** The geographic analysis area is the same as that identified for aviation and air traffic and includes airspace and airports used by regional air traffic, generally an area roughly bounded by Montauk, New York; Providence, Rhode Island; Provincetown, Massachusetts; and within a 10-mile buffer from wind lease areas in the RI/MA Lease Areas. **Scientific research and surveys**: The geographic analysis area is the same as for finfish, invertebrates, and essential fish habitat and includes the footprint of the proposed Project and all planned projects (as outlined on Figure 3.6-1) between Maine and mid-North Carolina.
Recreation and Tourism	The geographic analysis area for recreation and tourism includes the Massachusetts counties containing OECR infrastructure (Barnstable County for Phases 1 and 2, as well as Bristol County for the Phase 2 South Coast Variant onshore routing envelope); the City of Bridgeport, Connecticut, where the operations base would be located; and the geographic analysis area for scenic and visual resources, which generally consists of a 46-mile radius from all proposed Project WTG positions, as well as land areas within view of the proposed onshore substation sites. This radius is the area from which any portion of the proposed Project facilities would potentially be visible, as well as important recreational vessel ports potentially affected by the proposed Project.
Scenic and Visual Resources	The geographic analysis area for scenic and visual resources consists of a 46-mile radius from all proposed Project WTG positions, as well as land areas within view of the proposed onshore substation sites. This radius is the area from which any portion of the proposed Project facilities would potentially be visible, based on a maximum WTG rotor tip height of 1,171 feet above mean sea level, when considering only the obscuring effect of the curvature of the earth's surface and the height of the tops of WTG nacelles (where Federal Aviation Administration aviation hazard lighting would be mounted) of 725 feet above mean sea level. The onshore geographic analysis area does not include the OECR and OECC landfall sites because those components would be installed underground.

BOEM = Bureau of Ocean Energy Management; EIS = Environmental Impact Statement; LME = large marine ecosystem; OECC = offshore export cable corridor; OECR = onshore export cable route; RI/MA Lease Areas = Rhode Island and Massachusetts Lease Areas; SWDA = Southern Wind Development Area; WTG = wind turbine generator

D.1 References

Epsilon (Epsilon Associates, Inc.). 2022. *Draft New England Wind Construction and Operations Plan for Lease Area OCS-A 0534*. New England Wind Project. Accessed: October 2022. Retrieved from: https://www.boem.gov/renewable-energy/state-activities/new-england-wind-formerly-vineyard-wind-south

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