U.S. Department of the Interior
Bureau of Ocean Energy Management

Coastal Zone Management Act, Consistency Determination (15 CFR 930.36(a))

Wind Energy Areas Lease and Grants on the Atlantic Outer Continental Shelf Offshore North Carolina

The purpose of this Consistency Determination (CD) is to determine whether issuing Wind Energy Areas (WEAs) commercial leases and grants on the Outer Continental Shelf (OCS) of the Central Atlantic is consistent to the maximum extent practicable with the enforceable policies of the North Carolina Coastal Zone Management (CZM) program. This document is provided pursuant to the requirements of 15 Code of Federal Regulations (CFR) 930.39(a) of the Coastal Zone Management Act (CZMA) Federal Consistency regulations.

Section 307(c)(1) of the CZMA, as amended, requires that Federal agency activities affecting any land or water use, or natural resource of the coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of federally approved state management programs.

The Bureau of Ocean Energy Management (BOEM) is proposing to issue commercial leases within the WEAs and granting of rights-of-way (ROWs) and rights-of-use and easement (RUEs) in support of future wind energy development in the Central Atlantic. **Figure 1** shows the locations of the three WEAs, totaling appropriately 356,545 acres (1,442.89 square kilometers [km^2]. The northernmost WEA (A-2) is a 101,769-acre (412-km^2) area on the OCS in a location approximately 26 nautical miles (nm) (48 kilometers [km]) offshore Delaware. The central WEA (B-1) is a 78,283-acre (317-km^2) area on the OCS in a location approximately 25 nm (46 km) offshore Delaware, 19 nm (35 km) offshore Maryland, and 19 nm (35 km) offshore Virginia. The third WEA (C-1) is a 176,493-acre (714-km^2) area on the OCS in a location approximately 31 nm (65 km) offshore Virginia. Issuance of commercial leases would result in site assessment activities (i.e., placement of a meteorological ocean buoy) on lease and site characterization activities (i.e., geophysical, geotechnical, biological, and archaeological surveys and monitoring activities) within and around leases, and between leases and the shore. Although site assessment and site characterization activities associated with issuance of leases would occur predominantly on the OCS and in the state waters of Delaware, vessels used for these activities may also utilize ports or transit through the state waters of Maryland, Virginia, and North Carolina. As such, separate CDs have been prepared for each state to identify enforceable policies unique to each state.

The commercial leases would not authorize any energy facility construction or operations activities on the OCS but would grant the lessee the exclusive rights to submit, for BOEM's potential approval, a Site Assessment Plan (SAP) and Construction and Operations Plan (COP) proposing development of the leasehold for potential future construction and operation of floating offshore wind turbines, installation of interarray and export cables, and

associated wind energy-related facilities offshore Delaware. Permitting and consultation for future construction and operation of offshore wind energy facilities would be addressed through separate processes after the submittal of a SAP and COP and are not considered in this CD.

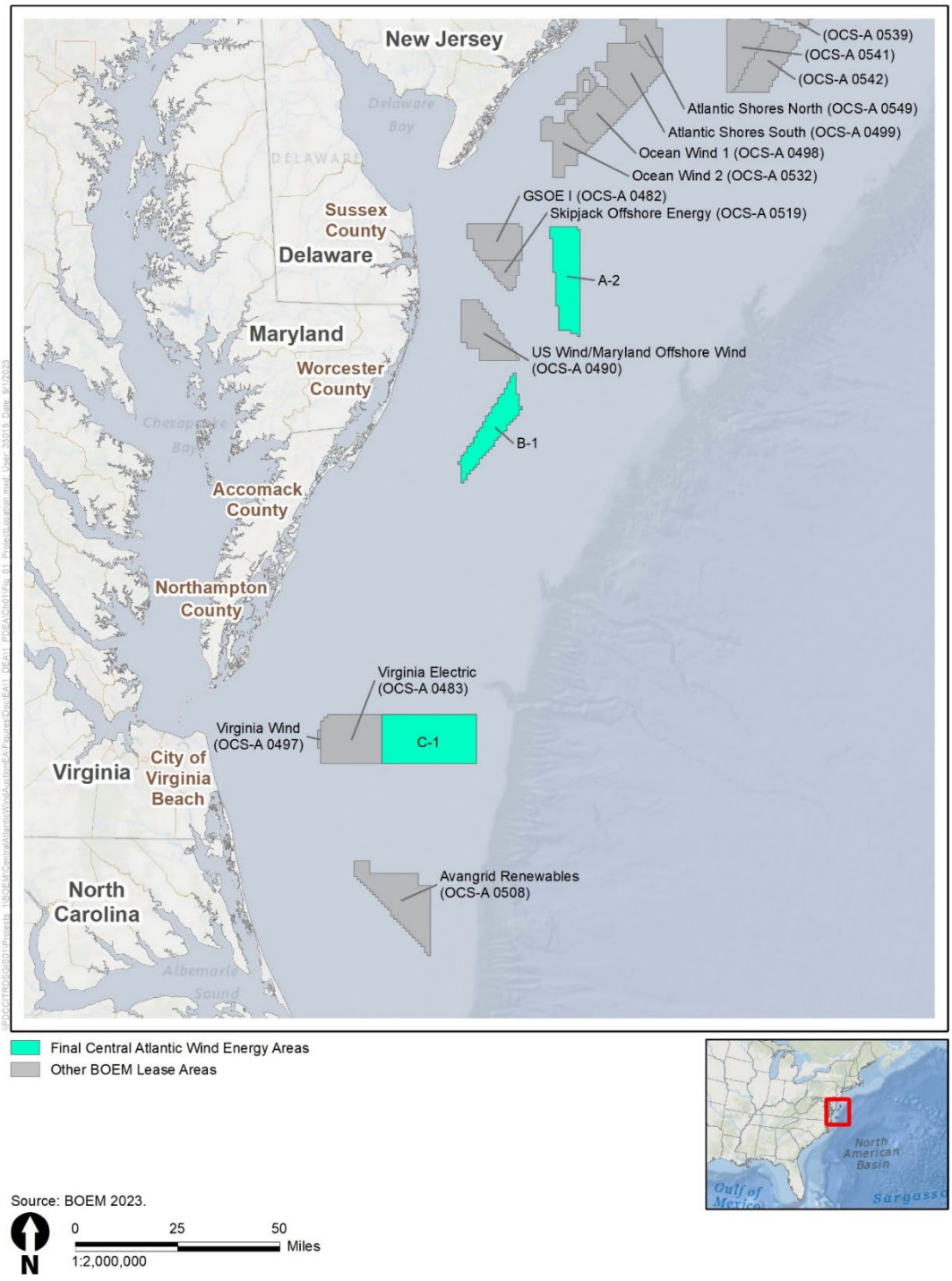

Figure 1. Central Atlantic Wind Energy Areas

1.0 BACKGROUND

BOEM is authorized to issue leases on the OCS for wind energy development pursuant to Section 388 of the Energy Policy Act of 2005. On April 22, 2009, BOEM promulgated regulations implementing this authority at 30 CFR Part 585. The regulations establish a program to grant leases, easements, and ROWs for orderly, safe, and environmentally responsible renewable energy development activities, such as the siting and construction of offshore wind facilities on the OCS as well as facilities relating to other forms of renewable energy such as marine hydrokinetic energy (i.e., wave and current).

Several programmatic analyses and consultations are relevant to the site assessment and site characterization activities that would be conducted in association with the Proposed Action for the commercial leases and grants. The Minerals Management Service (MMS) prepared a *Programmatic Environmental Impact Statement for Alternative Energy Development and Production and Alternate Use of Facilities on the Outer Continental Shelf* (Programmatic EIS) to evaluate the impact of establishing a comprehensive, nationwide MMS Alternative Energy Program on the OCS, including through Federal issuance of leases and associated site assessment and characterization activities (MMS 2007). The final rule and the Programmatic EIS can be reviewed for reference on the BOEM website at http://www.boem.gov/Renewable-Energy-Program/Regulatory-Information/Index.aspx and http://www.boem.gov/Renewable-Energy-Program/Regulatory-Information/Guide-To-EIS.aspx. In addition, BOEM published the *Atlantic Geological and Geophysical Activities Programmatic Environmental Impact Statement* (G&G PEIS; BOEM 2014). The G&G PEIS can be viewed here: http://www.boem.gov/Atlantic-G-G-PEIS/. In 2021, BOEM completed a biological assessment for *Data Collection and Site Survey Activities for Renewable Energy on the Atlantic Outer Continental Shelf*, which established programmatic project design criteria (PDCs) and best management practices (BMPs) for data collection and site survey activities developed through consultation with the National Marine Fisheries Service (NMFS). BOEM proposes to update these PDCs and BMPs for data collection and site survey activities conducted in association with the commercial leases and grants in the Central Atlantic as shown in Appendix B of the NMFS Programmatic Consultation (NMFS 2021).

A summary of planning and leasing activities for the WEAs in the Central Atlantic follows.

In April 2022, BOEM announced, "The Call for Information and Nominations- Commercial Leasing for Wind Power Development on the Central Atlantic Outer Continental Shelf (OCS)" for possible leasing in areas on the OCS offshore the central Atlantic coast (87 *Federal Register* 25539). BOEM specifically requested information on six distinct areas across 3.9 million acres (15,783 km^2) with the closest point to shore being about 20 nm (37 km).

In November 2022, BOEM announced eight draft WEAs covering approximately 1.7 million acres (6,880 km^2) offshore Delaware, Maryland, Virginia, and North Carolina. Collaborating with the National Oceanic and Atmospheric Administration's (NOAA) National Centers for

Coastal Ocean Science, a comprehensive process was administered to determine the possible impacts on local resources (BOEM 2022).

In July 2023, BOEM announced the three final WEAs in the Central Atlantic (BOEM 2023a). The three final WEAs were selected after careful consideration of the feedback received from Tribes, states, local residents, ocean users, Federal agencies (including the Department of Defense and the National Aeronautics and Space Administration, and NMFS), and other members of the public. BOEM worked with NOAA's National Centers for Coastal Ocean Science to develop a spatial model that informed the selection of the Final WEAs.

2.0 PROPOSED ACTION DESCRIPTION

This section provides an overview of the Proposed Action and summarizes associated activities relevant to the enforceable policies of the North Carolina CZM programs.

The Proposed Action is to offer to lease all or some of the WEAs for commercial wind energy development and to grant ROWs and RUEs in support of wind energy development of the OCS in the Central Atlantic. BOEM would potentially issue leases that may cover the entirety of the WEAs, issue easements associated with each lease, and issue grants for subsea cable corridors and associated offshore collector/converter platforms. The ROWs, RUEs, and potential easements would all be located within the Central Atlantic and may include corridors that extend from the WEAs to the onshore energy grid. The Proposed Action would result in site assessment activities on the leases and site characterization activities on the leases, grants, and potential easements. Site assessment activities may include the temporary placement of meteorological (met) buoys. Site characterization activities may include geophysical, geotechnical, biological, and archeological surveys and monitoring activities. Certain site characterization surveys would be conducted within and around the lease and between the lease and the shoreline to evaluate potentially suitable locations for future installation of submarine export cables and wet storage of wind turbine generators before installation.

The commercial leases would not authorize any energy facility construction or operations activities on the OCS but would grant the lessee the exclusive rights to submit, for BOEM's potential approval, a SAP and COP proposing development of the leasehold; the lease does not, by itself, authorize any activity within the lease area. Under the Proposed Action, BOEM would require each lessee to avoid or minimize potential impacts on the environment by complying with various requirements. Before the approval of any plan authorizing the construction and operation of wind energy-related facilities, BOEM would prepare a plan-specific environmental analysis and would comply with all required consultation requirements, including CZMA Federal Consistency regulations.

The analysis covers the effects of routine and non-routine activities associated with the issuance of a wind energy lease and related site assessment and site characterization activities within and around the lease and areas between the lease and shoreline. Reasonably foreseeable non-routine and low-probability events and hazards that could occur during lease issuance related activities include (1) severe storms, such as hurricanes and extratropical cyclones; (2) allisions and collisions between the site assessment structure or associated

vessels and other marine vessels or marine life; (3) spills from collisions or fuel spills resulting from generator refueling; and (4) recovery of lost survey equipment.

2.1 Assumptions and Impact Producing Factors

BOEM's assumptions for the Proposed Action are summarized in **Table 2-1** and **Table 2-2**. This scenario is based on the requirements of the renewable energy regulations at 30 CFR Part 585, BOEM's guidance for lessees, previous lease applications and plans that have been submitted to BOEM, and the biological assessment evaluating the effects of survey and data collection activities associated with renewable energy on the Atlantic OCS (Baker and Howson 2021). Unless otherwise noted, assumptions in this section are based on these sources.

Table 2-1. Assumptions for the Proposed Action

Overall Scenario Assumptions
BOEM would issue leases within the WEAs of 80,000 acres each (WEAs A-2 and B-1 are large enough to achieve this area; WEA C-1 is large enough for two such areas).
A lessee would install up to two met buoys per lease.
There would be up to two offshore export cable route corridors per lease.
A backbone offshore export cable system with offshore converter collector platforms (platforms located within the cable corridors) could be granted an easement.
Surveying and Sampling Assumptions
Site characterization surveys would likely begin within 1 year following execution of lease (based on the likelihood that a lessee would complete reconnaissance site characterization surveys prior to installing a met buoy). Site characterization surveys would then continue on an intermittent basis for up to 5 years leading up to the preparation and submittal of the COP.
Lessees would likely survey the entire proposed lease area during the 5-year site assessment term to collect required geophysical and geotechnical information for siting of commercial facilities (wind turbines and offshore export cable corridors). The surveys may be completed in phases, with the met buoy areas likely to be surveyed first.
Sub-bottom sampling (CPTs, vibracores, grab samples, SPI) of the WEA would require a sub-bottom sample at every potential wind turbine location (which would only occur in the portion of the WEA where structural placement is allowed) and one sample per kilometer of offshore export cable corridor. Sampling will also be conducted at locations where offshore collector and/or converter platforms are proposed. The amount of effort and vessel trips required to collect the geotechnical samples varies greatly by the type of technology used to retrieve the sample. Benthic sampling could also include nearshore, estuarine, and SAV habitats along the offshore export cable routes.
Lessees would be required to comply with SOCs developed to avoid and minimize adverse effects on resources (**Section 5** of the EA).
Installation, Decommissioning, and Operations and Maintenance Assumptions
Met buoy installation and decommissioning would likely take approximately 1 day each.
Met buoy installation and decommissioning would likely occur between April and August (due to weather).
Met buoy installation would likely occur in Year 2 after lease execution.
Met buoy decommissioning would likely occur in Year 6 or Year 7 after lease execution.
Assumptions for Generation of Noise
Under the Proposed Action, the following activities and equipment would generate noise: HRG survey equipment and vessel engines during site characterization surveys and met buoy installation, operations and maintenance, and decommissioning.

BOEM = Bureau of Ocean Energy Management; COP = Construction and Operations Plan; CPT = cone penetration test; EA = Environmental Assessment; HRG = high-resolution geophysical; met = meteorological; SAV = submerged aquatic vegetation; SPI = sediment profile imaging; WEA = Wind Energy Area.

The Proposed Action within the Draft Environmental Assessment (EA) analyzes the effects of routine activities associated with lease and grant issuance, site characterization activities (i.e., biological, geological, geotechnical, and archaeological surveys of the WEAs, as shown in **Table 2-2**), and site assessment activities (i.e., met buoy deployment, operation, and decommissioning) within the WEAs and within potential easements associated with offshore export cable corridors. It does not consider construction and operation of any commercial wind power facilities on a lease or grant in the identified WEAs, which would be evaluated separately if a lessee submits a COP.

Impact-producing factors (IPFs) associated with the various activities in the Proposed Action that could affect resources include the following:

Noise	Vessel Traffic
Air Emissions	Routine Vessel Discharges
Lighting	Bottom Disturbance/Anchoring
Habitat Degradation	Entanglement

The IPFs associated with each routine and non-routine activity are discussed in the following subsections.

Table 2-2. Typical equipment that would be used for surveys associated with the Proposed Action (Alternative B)

Survey Type	Survey Equipment and/or Method	Resource Surveyed or Information Used to Inform
High-resolution geophysical surveys	Sub-bottom profiler, side-scan sonar, multibeam echosounder, magnetometer	Shallow hazards,[a] archaeological,[b] bathymetric charting, benthic habitat
Geotechnical/sub-bottom sampling[c]	Vibracores, deep borings, cone penetration tests	Geological[d]
Biological[e]	Grab sampling, benthic sled, underwater imagery/sediment profile imaging	Benthic habitat
Biological[e]	Aerial digital imaging, visual observation from boat or airplane	Avian
Biological[e]	Ultrasonic detectors installed on survey vessels used for other surveys	Bat
Biological[e]	Visual observation from boat or airplane	Marine fauna (marine mammals and sea turtles)
Biological[e]	Direct sampling of fish and invertebrates	Fish

[a]30 CFR §585.610(b)(2) and 30 CFR §585.626(a)(1)
[b]30 CFR §585.626(a) and 30 CFR §585.610–585.611
[c]30 CFR §585.610(b)(1) and 30 CFR §585.626(a)(4)
[d]30 CFR §585.610(b)(4) and 30 CFR §585.616(a)(2)
[e]30 CFR §585.610(b)(5) and 30 CFR §585.626(a)(3)

The U.S. Army Corps of Engineers (USACE) Nationwide Permit (NWP) Program was developed to streamline the evaluation and approval process for certain types of activities that have only minimal impacts on the aquatic environment. Most site characterization and site assessment activities under the Proposed Action would be covered by USACE NWP

Numbers 5 (*Scientific Measurement Devices*) and 6 (*Survey Activities*), which were developed under Section 404 of the Clean Water Act and Section 10 of the River and Harbors Act to provide a streamlined evaluation and approval process for certain activities that have minimal adverse impact, both individually and collectively, on the environment. NWP 5 covers the placement of scientific measurement devices, including tide gages, water recording devices, water quality testing and improvement devices, meteorological stations (which would include met buoys), and similar structures. NWP 6 covers a variety of survey activities, including core sampling, seismic exploratory operations, plugging of seismic shot holes and other exploratory-type bore holes, exploratory trenching, soil surveys, sampling, and historic resources surveys. An individual permit may be required from USACE if the proposed survey activities do not meet the terms and conditions of the NWP or if USACE determines that the survey activities would result in more than minimal adverse effects on the aquatic environment. Additionally, other Federal, state, and local permits, approvals, or authorizations may also be required.

2.2 Offshore Site Characterization Surveys

BOEM regulations require that a lessee provide the results of several surveys with both a SAP or COP, including a shallow hazards survey, a geological survey, biological surveys, a geotechnical survey, and an archaeological resource survey (30 CFR 585.626(a)(1) to (a)(5), respectively). BOEM refers to these surveys as "site characterization" activities. Site characterization activities (e.g., locating shallow hazards, cultural resources, and hardbottom areas; evaluating installation feasibility; assisting in the selection of appropriate placement and design of anchoring systems, and determining the variability of subsurface sediments) would necessitate conducting initial geophysical reconnaissance surveys to refine the selection of areas for subsequent High-Resolution Geophysical (HRG) surveys and geotechnical exploration. The purpose of the HRG survey would be to acquire geophysical shallow hazards data and information pertaining to the presence or absence of archaeological resources and to conduct bathymetric charting. The purpose of geotechnical exploration would be to acquire geophysical shallow hazards information, including information to determine whether shallow hazards would impact seabed support of the turbines, to determine the presence or absence of archaeological resources, and to conduct bathymetric charting.

BOEM assumes that, during site characterization, a lessee would survey potential offshore export cable routes (for connecting future wind turbines to an onshore power substation) from the WEA to shore using HRG survey methods. BOEM assumes that the HRG survey grids for a proposed offshore export cable route to shore would likely occur over a 1,000-meter-wide corridor centered on the potential offshore export cable location to allow for anticipated physical disturbances and movement of the proposed cable, if necessary. Because it is not yet possible to predict precisely where an onshore power substation may ultimately be installed or the route that any potential future export cable would take across the seafloor from the WEA to shore, the Draft EA used direct routes from the middle (centroid) of each WEA to hypothetical potential interconnection points onshore in Delaware, Maryland, Virginia, and North Carolina. The hypothetical points were selected based on proximity from shore to each WEA to conservatively approximate the level of surveys that may be conducted

to characterize an offshore export cable route. The hypothetical points used to approximate the level of surveys in no way represent a proposed export cable route.

Increased vessel presence and traffic during HRG surveys could result in several IPFs, including noise, air emissions, routine vessel discharges, and lighting from vessels.

2.3 Geotechnical Surveys

Geotechnical surveys are performed to assess the suitability of shallow sediments to support a structure foundation (i.e., gather information to determine whether the seabed can support foundation structures) or offshore export cables under operational and environmental conditions that could potentially be encountered (including extreme weather events), as well as to document the sediment characteristics necessary for design and installation of all structures and cables. Samples for geotechnical evaluation are typically collected using shallow-bottom coring and surface sediment sampling devices taken from a survey vessel or drilling vessel. Likely methods to obtain samples to analyze physical and chemical properties of surface sediments are described in **Table 2-6** in the Draft EA. These methods may result in bottom disturbance as a result of physical seafloor sampling.

Geotechnical/benthic sampling of the WEAs would require a sample at every potential wind turbine location (which would only occur in the portion of the WEA where structural placement is allowed) and one sample per kilometer of offshore export cable corridor or backbone transmission route. The amount of effort and vessel trips required to collect the geotechnical samples varies greatly by the type of technology used to retrieve the sample. The area of seabed disturbed by individual sampling events (e.g., collection of a core or grab sample) is estimated to range from 1 to 10 square meters (m^2) (BOEM 2014; Fugro Marine GeoServices Inc. 2017). Some vessels require anchoring for brief periods using small anchors; however, approximately 50% of deployments for this sampling work could involve a boat having dynamic positioning capability (i.e., no seafloor anchoring impacts) (BOEM 2014).

As with HRG surveys, increased vessel presence and traffic during geotechnical surveys may result in several IPFs including noise, air emissions, routine vessel discharges, and lighting from vessels. Additionally, bottom disturbance may occur as a result of geotechnical surveys due to physical sampling methods.

2.4 Biological Surveys

Biological surveys are necessary to characterize the biological resources that could be affected by the proposed activity or could affect activities in the proposed plan. Benthic habitat, avian, bat, and marine fauna surveys are all expected as part of the Proposed Action. Biological survey activities associated with the Proposed Action are described in more detail in the Draft EA. For biological surveys, BOEM assumes that all vessels associated with the Proposed Action would be required to abide by the Standard Operating Conditions (SOCs). NMFS may require additional measures from the lessee to comply with the Marine Mammal Protection Act (MMPA) and/or the Endangered Species Act (ESA).

Increased vessel presence and traffic during biological surveys may result in several IPFs, including noise, air emissions, routine vessel discharges, and lighting from vessels. Some biological surveys may be conducted from an aircraft (e.g., avian and bat surveys) and, if conducted, may result in aircraft noise, lighting, and emissions. Additionally, bottom disturbance and marine faunal mortality may occur as a result of benthic habitat and fisheries surveys due to physical sampling methods.

2.5 Meteorological Buoys

Met buoys are used for collecting wind, waves, and current data in the offshore environment.

Installation, operation and maintenance, and decommissioning of met buoys for characterizing wind conditions are part of the assumptions/scenario for the Proposed Action. Met buoys are anchored to the seafloor at fixed locations and regularly collect observations from many different atmospheric and oceanographic sensors. The Draft EA assumes that a maximum of two buoys per lease would be installed; thus, with an assumed four leases within the three WEAs, a total of eight buoys are considered (two met buoys per lease area). The choice of buoy type usually depends on its intended installation location and measurement requirements. On the OCS, a larger discus-type or boat-shaped hull buoy may require a combination of a chain, nylon, and buoyant polypropylene materials designed for many years of ocean service.

Buoys are towed or carried aboard a vessel to the installation location and either lowered to the ocean surface from the deck of the vessel or placed over the final location and the mooring anchor is dropped. Based on previous proposals, anchors for boat-shaped or discus-shaped buoys would weigh about 2,721 to 4,536 kilograms (kg), with a footprint of about 0.5 m^2 and an anchor chain sweep of about 34,398 m^2 (BOEM 2014; Fugro Marine GeoServices Inc. 2017). Transport and installation vessel anchoring for 1 day is anticipated for these types of buoys. For spar-type buoys, installation would occur in two phases. Phase one would occur over 1 day, and the clump anchor would be transported and deployed to the seabed. In phase two, which would take place over 2 days, the spar-buoy would be similarly transported and then crane lifted into the water. Divers would secure it to the clump anchor (which weighs a minimum of 100 tons). Previous proposals have indicated that the maximum area of disturbance related to deployment of a spar-buoy occurs during anchor deployment/removal, resulting in a maximum area of disturbance of 118 m^2 of seafloor between its clump anchor and mooring chain (BOEM 2014).

On-site inspections and preventative maintenance (i.e., marine fouling, wear, or lens cleaning) are expected to occur on a monthly or quarterly basis for met buoys. Periodic inspections for specialized components (i.e., buoy, hull, anchor chain, or anchor scour) would occur at different intervals but would likely coincide with the monthly or quarterly inspection to minimize the need for additional boat trips to the site.

Decommissioning is basically the reverse of the installation process. Equipment recovery would be performed with the support of a vessel(s) equivalent in size and capability to that used for installation. For small buoys, a crane-lifting hook would be secured to the buoy. A

water/air pump system would de-ballast the buoy, causing it to tip into the horizontal position. The mooring chain and anchor would be recovered to the deck using a winching system. The buoy would then be transported to shore. Buoy decommissioning is expected to be completed within 1 to 2 days depending on buoy type.

Site clearance activities are also a part of decommissioning obligations and requirements pursuant to 30 CFR §585.906I and 30 CFR §585.910(b). A lessee must provide evidence that the area used for site assessment facilities (i.e., met buoys) has been returned to its original state within 60 days following removal of the facilities. The lessee must remove any trash or bottom debris introduced as a result of operations and document that the lease area is clear; such evidence may consist of one or more of the following: photographic bottom survey, site clearance, high-resolution side-scan survey, or sector-scanning sonar survey.

IPFs associated with met buoy installation, operation and maintenance, and decommissioning (including site clearance) may include vessel traffic, noise, lighting, air emissions, and routine vessel discharges. Bottom disturbance and habitat degradation may also occur as a result of met buoy anchoring and installation. The presence of the buoy may act as a fish aggregating device attracting fish and other species (e.g., birds) to the buoy location. Entanglement in buoy or anchor components is a possible IPF associated with this phase of the Proposed Action.

2.6 Coastal Activity

The Proposed Action within the Draft EA analyzes the effects of routine activities associated with lease and grant issuance, site characterization activities, and site assessment activities within the WEAs and within potential easements associated with offshore export cable corridors. BOEM assumes anticipated offshore site characterization work is generally smaller in scale than other activities within existing ports; port infrastructure requirements are also likely to be smaller. BOEM, therefore, does not anticipate expansion of port facilities to meet lessee needs and therefore considers only existing facilities that can currently accommodate proposed site characterization and site assessment activities. Although site assessment and site characterization activities associated with issuance of leases would occur predominantly on the OCS and in the state waters of North Carolina, vessels used for these activities may also utilize ports or transit through the state waters of Maryland, Virginia, and North Carolina.

2.7 Non-Routine Events

Reasonably foreseeable non-routine and low-probability events and hazards that could occur during site characterization and site assessment related activities include the following: (1) severe storms, such as hurricanes and extratropical cyclones; (2) allisions and collisions between the site assessment structures or associated vessels and other marine vessels or marine life; (3) spills from collisions or fuel spills resulting from generator refueling; and (4) recovery of lost survey equipment.

2.7.1 Storms

Severe weather events have the potential to cause structural damage and injury to personnel. Major storms, winter nor'easters, and hurricanes pass through the area regularly, resulting in elevated water levels (storm surge) and high waves and winds. Storm surge and wave heights from passing storms are worse in shallow water and along the coast but can pose hazards in offshore areas. The Atlantic Ocean hurricane season extends from June 1 to November 30, with a peak in September when hurricanes would be most likely to impact the WEAs at some time during the Proposed Action. Storms could contribute to an increased likelihood of allisions and collisions that could result in a spill. However, the storm would cause the spill and its effects to dissipate faster, vessel traffic is likely to be significantly reduced in the event of an impending storm, and surveys related to the Proposed Action would be postponed until after the storm had passed. Although storms have the potential to impact met buoys, the structures are designed to withstand storm conditions. Though unlikely, structural failure of a met buoy could result in a temporary hazard to navigation.

2.7.2 Allisons and Collisions

An allision occurs when a moving object (i.e., a vessel) strikes a stationary object (e.g., met buoy); a collision occurs when two moving objects strike each other. A met buoy in the WEA could pose a risk to vessel navigation. An allision between a ship and a met buoy could result in the damage or loss of the buoy and/or the vessel, as well as loss of life and spillage of petroleum product. Although considered unlikely, vessels associated with site characterization and site assessment activities could collide with other vessels, resulting in damages, petroleum product spills, or capsizing. Risk of allisions and collisions is reduced through U.S. Coast Guard (USCG) Navigation Rules and Regulations, safety fairways, and Traffic Separation Schemes (TSSs) for vessels transiting into and out of the ports primarily in North Carolina, Maryland, and Virginia. BOEM anticipates that aerial surveys (if necessary) would not be conducted during periods of storm activity because the reduced visibility conditions would not meet visibility requirements for conducting the surveys; flying at low elevations would pose a safety risk during storms and times of low visibility.

Collisions between vessels and allisions between vessels and met buoys are considered unlikely as vessel traffic is controlled by multiple routing measures, such as safety fairways, TSSs, and anchorages. These higher traffic areas were excluded from the WEAs. Risk of allisions with met buoys would be further reduced by USCG-required marking and lighting.

2.7.3 Spills

A spill of petroleum product could occur as a result of hull damage from allisions with a met buoy, collisions between vessels, accidents during the maintenance or transfer of offshore equipment and/or crew, or natural events (i.e., strong waves or storms). From 2000 to 2009, the average spill size for vessels other than tank ships and tank barges was 88 gallons (USCG 2011); should a spill from a vessel associated with the Proposed Action occur, BOEM anticipates that the volume would be similar.

Diesel fuel is lighter than water and may float on the water's surface or be dispersed into the water column by waves. Diesel would be expected to dissipate very rapidly, evaporate, and biodegrade within a few days (MMS 2007a). The NOAA's Automated Data Inquiry for Oil Spills (ADIOS; an oil weathering model) was used to predict dissipation of a maximum spill of 2,500 barrels, a spill far greater than what is assumed as a non-routine event during the Proposed Action. Results of the modelling analysis showed that dissipation of spilled diesel fuel is rapid. The amount of time it took to reach diesel fuel concentrations of less than 0.05% varied between 0.5 and 2.5 days, depending on ambient wind (Tetra Tech Inc. 2015), suggesting that 88 gallons would reach similar concentrations much faster and limit the environmental impact of such a spill.

Vessels are expected to comply with USCG requirements relating to prevention and control of oil spills, and most equipment on the met buoys would be powered by batteries charged by small wind turbines and solar panels. BOEM expects that each of the vessels involved with site characterization and site assessment activities would minimize the potential for a release of oils and/or chemicals in accordance with 33 CFR Part 151, 33 CFR Part 154, and 33 CFR Part 155, which contain guidelines for implementation and enforcement of vessel response plans, facility response plans, and shipboard oil pollution emergency plans. Based on the size of the spill, it would be expected to dissipate very rapidly and would then evaporate and biodegrade within a day or two (at most), limiting the potential impacts to a localized area for a short duration.

2.7.4 Recovery of Lost Survey Equipment

Equipment used during site characterization and site assessment activities (e.g., towed HRG survey equipment, cone penetration test [CPT] components, grab sampler, buoys, lines, cables) could be accidentally lost during survey operations. Additionally, it is possible (although unlikely) that a met buoy could disconnect from the clump anchor. In the event of lost equipment, recovery operations may be undertaken to retrieve the equipment. Recovery operations may be performed in a variety of ways depending on the equipment lost. A commonly used method for retrieval of lost equipment that is on the seafloor is through dragging grapnel lines (e.g., hooks, trawls). A single vessel deploys a grapnel line to the seafloor and drags it along the bottom until it catches the lost equipment, which is then brought to the surface for recovery. This process can result in significant bottom disturbances as it requires dragging the grapnel line along the bottom until it hooks the lost equipment, which may require multiple passes in a given area. In addition to dragging a grapnel line along the bottom, after the line catches the lost equipment, it will drag all the components along the seafloor until recovery.

Marine debris, such as lost survey equipment, that is not able to be retrieved because it is either small or buoyant enough to be carried away by currents or is completely or partially embedded in the seafloor (for example, a broken vibracore rod) could create a potential hazard for bottom-tending fishing gear or cause additional bottom disturbance. A broken vibracore rod that cannot be retrieved may need to be cut and capped 1 to 2 m below the seafloor. For the recovery of marine debris, BOEM will work with the lessee/operator to develop a recovery plan as described in the NMFS Programmatic ESA consultation for data

collection activities (Anderson 2021). Selection of a mitigation strategy would depend on the nature of the lost equipment, and further consultation may be necessary.

IPFs associated with recovery of marine debris such as lost survey equipment may include vessel traffic, noise, lighting, air emissions, and routine vessel discharges from a single vessel. Recovery operations may also cause bottom disturbance and habitat degradation.

3.0 STATE ENFORCEABLE POLICIES

As part of this CD, BOEM has evaluated and documented in the enclosed table (see **Appendix A**), policies identified by North Carolina as enforceable and applicable to offshore and coastal resources or uses and CZMA "reasonably foreseeable coastal effects" that might be expected for activities conducted under the Proposed Action.

4.0 CONSISTENCY DETERMINATION

BOEM has evaluated all applicable enforceable policies of North Carolina and the potential activities resulting from the Proposed Action. This CD has examined whether the Proposed Action described in **Section 1** is consistent to the maximum extent practicable with the policies and provisions identified as enforceable by the CZM program of North Carolina (see **Appendix A**). Based on the preceding information and analyses, and the incorporated-by-reference EA, BOEM has determined the Proposed Action would be consistent to the maximum extent practicable with the policies that North Carolina has identified as enforceable.

5.0 LITERATURE CITED

Anderson J. 2021. Letter to J.F. Bennett concerning the effects of certain site assessment and site characterization activities to be carried out to support the siting of offshore wind energy development projects off the U.S. Atlantic Coast. Gloucester (MA): U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. 68 p.

Baker K, Howson U. 2021. Data collection and site survey activities for renewable energy on the Atlantic Outer Continental Shelf. Biological assessment. Sterling (VA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 152 p.

BOEM. 2014. Atlantic OCS Proposed Geological and Geophysical Activities Mid-Atlantic and South Atlantic Planning Areas. Final Programmatic Environmental Impact Statement. 3 vols. 2,158 p. Report No.: OCS EIS/EA BOEM 2014-001.

BOEM 2022. BOEM Identifies Draft Wind Energy Areas in the Central Atlantic for Public Review and Comment. November 16. Available at: https://www.boem.gov/newsroom/press-releases/boem-identifies-draft-wind-energy-areas-central-atlantic-public-review-and.

BOEM 2023a. BOEM Finalizes Wind Energy Areas in the Central Atlantic: Areas have potential to support 4-8 gigawatts of clean renewable energy. July 31. Available at: https://www.boem.gov/newsroom/press-releases/boem-finalizes-wind-energy-areas-central-atlantic.

Fugro Marine GeoServices Inc. 2017. Geophysical and geotechnical investigation methodology assessment for siting renewable energy facilities on the Atlantic OCS. Herndon (VA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 229 p. Report No.: OCS Study BOEM 2017-049.

MMS. 2007. Programmatic environmental impact statement for alternative energy development and production and alternate use of facilities on the Outer Continental Shelf. Final environmental impact statement. Herndon (VA): U.S. Department of the Interior, Minerals Management Service. 4 vols. Report No.: OCS EIS/EA MMS 2007-046. Available at: https://www.boem.gov/renewable-energy/guide-ocs-alternative-energy-final-programmatic-environmental-impact-statement-eis.

National Marine Fisheries Service. 2021. Offshore Wind Site Assessment and Site Characterization Activities Programmatic Consultation. June 29. Available at: https://media.fisheries.noaa.gov/2021-12/OSW-surveys-NLAA-programmatic-rev-1-2021-09-30-508-.pdf.

Tetra Tech Inc. 2015. USCG final environmental impact statement for the Port Ambrose Project deepwater port application. Washington (DC): U.S. Coast Guard Vessel and Facility Operating Standards. 549 p. Report No.: USCG-2013-0363.

USCG. 2011. Table 386: oil spills in U.S. water-number and volume. Pollution incidents in and around U.S. waters, a spill/release compendium: 1969–2004 and 2004–2009. U.S. Coast Guard Marine Information for Safety and Law Enforcement (MISLE) System. Available at: https://www2.census.gov/library/publications/2011/compendia/statab/131ed/tables/12s0386.xls.

Appendix A: Applicable Enforceable Policies for the Coastal Zone Management Program for North Carolina

Category	Enforceable Policies: Applicable Coastal Zone Management Rules	Reasonably Foreseeable Coastal Effects (CZMA Coastal Effects)
Wetlands/ Rivers & Waterways	§ 113A-102. Legislative findings and goals § 113A-113. Areas of environmental concern; in general § 113A-115.1. Limitations on erosion control structures § 113A-129.1. Legislative findings and purposes	Minor indirect impacts from routine activities may occur from wake erosion caused by vessel traffic resulting from the Proposed Action. Wake erosion and sedimentation effects would be limited to approach channels and the coastal areas near ports and bays used to conduct activities. Given the existing amount and nature of vessel traffic, there would be a negligible, if any, increase in wake-induced erosion of associated channels based on the relatively small size and number of vessels associated with the Proposed Action. Moreover, all approach channels to these ports are armored, and speed limits would be enforced, which also helps to prevent most erosion. No direct impacts on wetlands or other coastal habitats would occur from routine activities in the lease areas based on the distance of the lease areas from shore. Additionally, existing ports or industrial areas are expected to be used in support of the proposed project. No expansion of existing facilities is expected to occur because of the Proposed Action. Indirect impacts from routine activities may occur from wake erosion and associated added sediment caused by increased traffic in support of the Proposed Action. Given the volume and nature of existing vessel traffic in the area, a negligible increase in wake-induced erosion may occur.
Coastal Waters and Habitat	§ 113A-102. Legislative findings and goals § 113A-113. Areas of environmental concern; in general § 113A-115.1. Limitations on erosion control structures § 113A-129.1. Legislative findings and purposes § 113A-134.1. Legislative findings	For the Proposed Action, BOEM estimates an increase in vessel traffic from the routine activities that range from approximately 201 to 377 vessel trips from site characterization and assessment activities would occur over the 5 years following issuance of a commercial lease (see Appendix A of the EA for vessel trip calculations). The Proposed Action would not adversely impact coastal, estuarine, and marine habitats, nor would it interrupt the ecosystem services provided by these habitats. Routine activities in the lease areas would not have direct impacts on coastal resources and coastal habitats because the proposed site assessment activities would take place at least 12 nm from the shore. Site characterization surveys for potential export cable routes may take place within 12 nm of shore. Direct impacts from the Proposed Action on benthic habitats would be limited to short-term disturbance and only minimal removal of available benthic habitat in the long term. Sensitive benthic

Category	Enforceable Policies: Applicable Coastal Zone Management Rules	Reasonably Foreseeable Coastal Effects (CZMA Coastal Effects)
		areas such as coral reefs, hardbottom areas, seagrass beds, and chemosynthetic communities would be avoided when placing the met buoy.
Historic and Cultural Areas	§ 113A-102. Legislative findings and goals § 113A-113. Areas of environmental concern; in general	The potential impact of the Proposed Action on cultural and historic resources has been evaluated in accordance with the National Historic Preservation Act and Antiquities Act. Temporary placement of a met buoy and vessels conducting site characterization surveys have the potential to impact the viewshed of onshore historic properties with open views in the direction of the lease areas. The met buoy and vessel traffic associated with surveys may fall within the viewshed of these onshore properties. The presence of the met buoy is expected to result in negligible impacts on onshore historic properties because its visibility from onshore locations would be temporary (approximately 2 years) and indistinguishable from lighted vessel traffic if visible from distances at least 19 nm away. Potential increased vessel traffic associated with site characterization surveys also would be temporary in nature. These vessels would be indistinguishable from existing vessel traffic and only result in a nominal increase in existing vessel traffic over the approximately 5-year span of activities. Because the vessel traffic would be both temporary and indistinguishable from existing vessel traffic in the Central Atlantic it is expected to have a negligible impact on onshore historic properties.
Wildlife	§ 113A-102. Legislative findings and goals § 113A-113. Areas of environmental concern; in general	The potential impact of the Proposed Action on wildlife species and biological resources has been evaluated in accordance with the Endangered Species Act Section 7 between consultations with USFWS and NMFS. Section 4.3 and Appendix E of the EA describes potential impacts on biological resources in detail.
Transportation/ Development	§ 113A-102. Legislative findings and goals § 113A-110. Land-use plans § 113A-113. Areas of environmental concern; in general § 113A-115.1. Limitations on erosion control structures	Vessel traffic associated with the Proposed Action would be primarily from ports in Delaware, Maryland, and Virginia. Specific ports used by a lessee in the future would be determined primarily by proximity to the WEAs and capacity to handle proposed activities. Activities associated with the Proposed Action would not require additional coastal infrastructure to be constructed, would not require expansion of port areas (even if smaller ports are used), and would be smaller in scale than ongoing activities at existing ports. There are numerous port and marina locations shoreward of the WEAs that may be used by commercial fishing vessels, recreational vessels, and project vessels. The projected number of vessel trips for site characterization and site assessment activities at any of these ports or marinas would be small relative to existing use and

Category	Enforceable Policies: Applicable Coastal Zone Management Rules	Reasonably Foreseeable Coastal Effects (CZMA Coastal Effects)
		are not expected to adversely impact current use of these facilities. Additional information regarding vessel information can be found in the Environmental Assessment in Section 4.2.5 and Appendix A.

BOEM = Bureau of Ocean Energy Wind; CMZA = Coastal Zone Management Act; EA = Environmental Assessment; met = meteorological; nm = nautical mile; NMFS = National Marine Fisheries Service; USFWS = U.S. Fish and Wildlife Service.