Record of Decision

Empire Offshore Wind: Empire Wind Project (EW 1 and EW2) Construction and Operations Plan

November 20, 2023

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

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1. Introduction

This document constitutes the Bureau of Ocean Energy Management's (BOEM) and the National Ocean and Atmospheric Administration (NOAA) National Marine Fisheries Service's (NMFS)[1] joint Record of Decision (ROD) for the Final Environmental Impact Statement (EIS) prepared for the Empire Offshore Wind: Empire Wind Project (EW 1 and EW 2) Construction and Operations Plan (COP). The ROD addresses BOEM's action to approve the COP under subsection 8(p)(4) of the Outer Continental Shelf Lands Act (OCSLA), 43 U.S.C. § 1337(p), and NMFS' action to issue a Letter of Authorization (LOA) to Empire Offshore Wind LLC (Empire or Empire Wind) under Section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA), as amended, 16 U.S.C. § 1371(a)(5)(A). This ROD was prepared following the requirements of the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 *et seq*., and 40 C.F.R. §§ 1500-1508.[2]

BOEM prepared the Empire Offshore Wind Final EIS with the assistance of a third-party contractor, ICF Jones & Stokes, Inc. NMFS, the U.S. Army Corps of Engineers (USACE), the U.S. Coast Guard (USCG), the Bureau of Safety and Environmental Enforcement (BSEE), the U.S. Environmental Protection Agency (USEPA), the National Park Service (NPS), and the U.S. Maritime Administration were cooperating agencies during the development and review of the document. Cooperating state agencies included the New York State Department of Environmental Conservation, the New York State Department of State, and the New York State Energy Research and Development Authority (NYSERDA).

NMFS received a request for authorization to take marine mammals incidental to construction activities related to the Project, which NMFS may authorize under the MMPA. NMFS's issuance of an MMPA incidental take authorization in the form of a LOA for Incidental Take Regulations (ITRs) is a major Federal action and, in relation to BOEM's action, is considered a connected action (40 CFR § 1501.9(e)(1)). The purpose of the NMFS action—which is a direct outcome of Empire's request for authorization to take marine mammals incidental to specified activities associated with the Project (e.g., pile driving)—is to evaluate Empire Wind's request pursuant to specific requirements of the MMPA and its implementing regulations administered by NMFS, considering impacts of the applicant's activities on relevant resources, and if appropriate, issue the authorization. NMFS needs to render a decision regarding the request for authorization due to NMFS' responsibilities under the MMPA (16 U.S.C. § 1371(a)(5)(A)) and its implementing regulations.

In addition to analyzing potential impacts resulting from BOEM's approval of the COP pursuant to Section 8(p)(4) of OCSLA, the Final EIS also analyzed potential impacts resulting from the proposed action that are relevant to USACE permitting actions under Section 10 of the Rivers and Harbors Act of 1899 (RHA), 33 U.S.C. § 403; Section 14 of the RHA, 33 U.S.C. § 408; Section 404 of the Clean Water Act (CWA), 33 U.S.C. § 1344; and NMFS' action of issuing a LOA for incidental harassment of small numbers of marine mammals during construction to Empire Offshore Wind LLC under the MMPA, 16 U.S.C. § 1371(a)(5)(A). See also 40 C.F.R. § 1501.9(e)(1)).

[1] For purposes of this Record of Decision, NMFS is exercising authority under the Marine Mammal Protection Act to issue marine mammal incidental take authorizations.
[2] The associated Final EIS was prepared using the 2020 Council on Environmental Quality (CEQ) NEPA Regulations. Therefore, this ROD follows the 2020 CEQ Regulations.

1.1. Background

In 2009, the U.S. Department of the Interior (DOI) announced final regulations for the Outer Continental Shelf (OCS) Renewable Energy Program, which was authorized by the Energy Policy Act of 2005. The Energy Policy Act provisions implemented by BOEM provide a framework for issuing renewable energy leases, easements, and rights-of-way for OCS activities. See Final EIS section 1.3. BOEM's renewable energy program occurs in four distinct phases: (1) regional planning and analysis, (2) lease issuance, (3) site assessment, and (4) construction and operations. The history of BOEM's planning and leasing activities offshore New York is summarized in Table 1-1.

Table 1.-1 History of BOEM Planning and Leasing Offshore New York

Year	Milestone
2010	BOEM formed the BOEM New York Renewable Energy Task Force (Task Force) in its consideration of potential leasing activities on the Outer Continental Shelf (OCS) offshore New York. The Task Force allowed for coordination among affected federal agencies and tribal, state, and local governments throughout the leasing process. The first Task Force meeting was held on November 18, 2010; subsequent meetings were held on April 3, 2012; September 26, 2013; and April 28, 2016.
2011	On September 8, 2011, BOEM received an unsolicited request from New York Power Authority (NYPA), Long Island Power Authority (LIPA), and Consolidated Edison (ConEd) for a commercial lease from NYPA. The proposal included the installation of up to 194 3.6-megawatt (MW) wind turbines, yielding a potential 700 MW of wind energy generation.
2013	On January 4, 2013, BOEM issued a Request for Interest in the Federal Register under Docket No. BOEM-2012-0083 to assess whether there are other parties interested in developing commercial wind facilities in the same area proposed by NYPA. In addition to inquiring about competitive interest, BOEM also sought public comment on the NYPA proposal, its potential environmental consequences, and the use of the area in which the proposed project would be located. In response, BOEM received two indications of interest.
2014	After reviewing nominations of interest received in response to the Request for Interest, BOEM determined that competitive interest in the area proposed by NYPA existed, and BOEM initiated the competitive leasing process pursuant to 30 C.F.R. 585.211. On May 28, 2014, BOEM published a "Call for Information and Nominations" (Call) under Docket No. BOEM-2013-0087 to seek additional nominations from companies interested in commercial wind energy leases within the Call area. BOEM also sought public input on the potential for wind development in the Call area, including comments on site conditions, resources, and existing uses of the area that would be relevant to BOEM's wind energy development authorization process. In response to the Call, BOEM received three additional nominations, for a total of six, plus one additional qualifications package submission.
2014	On the same day (May 28, 2014), BOEM also published a Notice of Intent to prepare an EA for commercial wind leasing and site assessment activities within the Call area.
2016	On June 6, 2016, BOEM published a Proposed Sale Notice for Commercial Leasing for Wind Power on the Outer Continental Shelf Offshore New York (Docket No. BOEM-2016-0027) and a Notice of Availability for the EA for commercial wind leasing and site assessment activities (Docket No. BOEM-2016-0038).
2016	On October 27, 2016, BOEM published the Final Sale Notice for a lease sale offshore New York (Docket No. BOEM-2016-0071).

Year	Milestone
2016	On October 31, 2016, BOEM published a Notice of Availability for a revised EA (Docket No. BOEM-2016-0066). Within the EA, BOEM issued a "Finding of No Significant Impact," which concluded that reasonably foreseeable environmental effects associated with the activities that would likely be performed following lease issuance (e.g., site characterization surveys in the WEA and deployment of meteorological buoys) would not significantly affect the environment (BOEM 2016). In response to the public comments BOEM received on the original EA, five aliquots (approximately 1,780 acres [720 hectares]) were removed from the northwestern portion of the initial WEA due to concerns over the sensitive habitat on Cholera Bank.
2016	On December 15–16, 2016, BOEM held the lease sale for an area offshore New York, or the "New York Lease Area," pursuant to 30 C.F.R. 585.211. Statoil Wind US, LLC (subsequently renamed to Equinor Wind US, LLC in 2018) was awarded Lease Area OCS-A 0512.
2018	Equinor Wind US, LLC submitted a SAP for Lease Area OCS-A 0512 to BOEM in June 2018, with revisions filed in July, August, and October 2018. BOEM determined the SAP was complete on August 22, 2018, and BOEM approved the SAP on November 21, 2018.
2020	Empire Wind submitted its COP on January 10, 2020. Empire Wind submitted updates to the COP on September 25, 2020; July 2, 2021; May 20, 2022; June 13, 2022; and July 21, 2023.
2021	On June 24, 2021, BOEM published a Notice of Intent to Prepare an Environmental Impact Statement for the Empire Wind Project offshore New York (Docket No. BOEM-2021-0038).
2022	On November 18, 2022, BOEM published a Notice of Availability of a Draft EIS initiating a 60-day public comment period for the Draft EIS.
2023	On September 15, 2023, BOEM published a Notice of Availability of a Final EIS in the Federal Register initiating a minimum 30-day mandatory waiting period, during which BOEM is required to pause before issuing a ROD. On November 15, 2023, BOEM published errata on its website that included certain edits to the summary and comparison of impacts among alternatives table in the Chapter 2 of the Final EIS to correct impact conclusions for marine mammals. The errata also provide corrections to Chapter 3 to include identification of species-specific cumulative impacts of the Proposed Action. None of these corrections are substantive or affect the analysis or conclusions in the Final EIS.

COP = Construction and Operations Plan; EA = Environmental Assessment; EIS = Environmental Impact Statement; ESA = Endangered Species Act; FONSI = Finding of No Significant Impact; ITR = Incidental Take Regulations; ROD = Record of Decision; WEA = Wind Energy Area

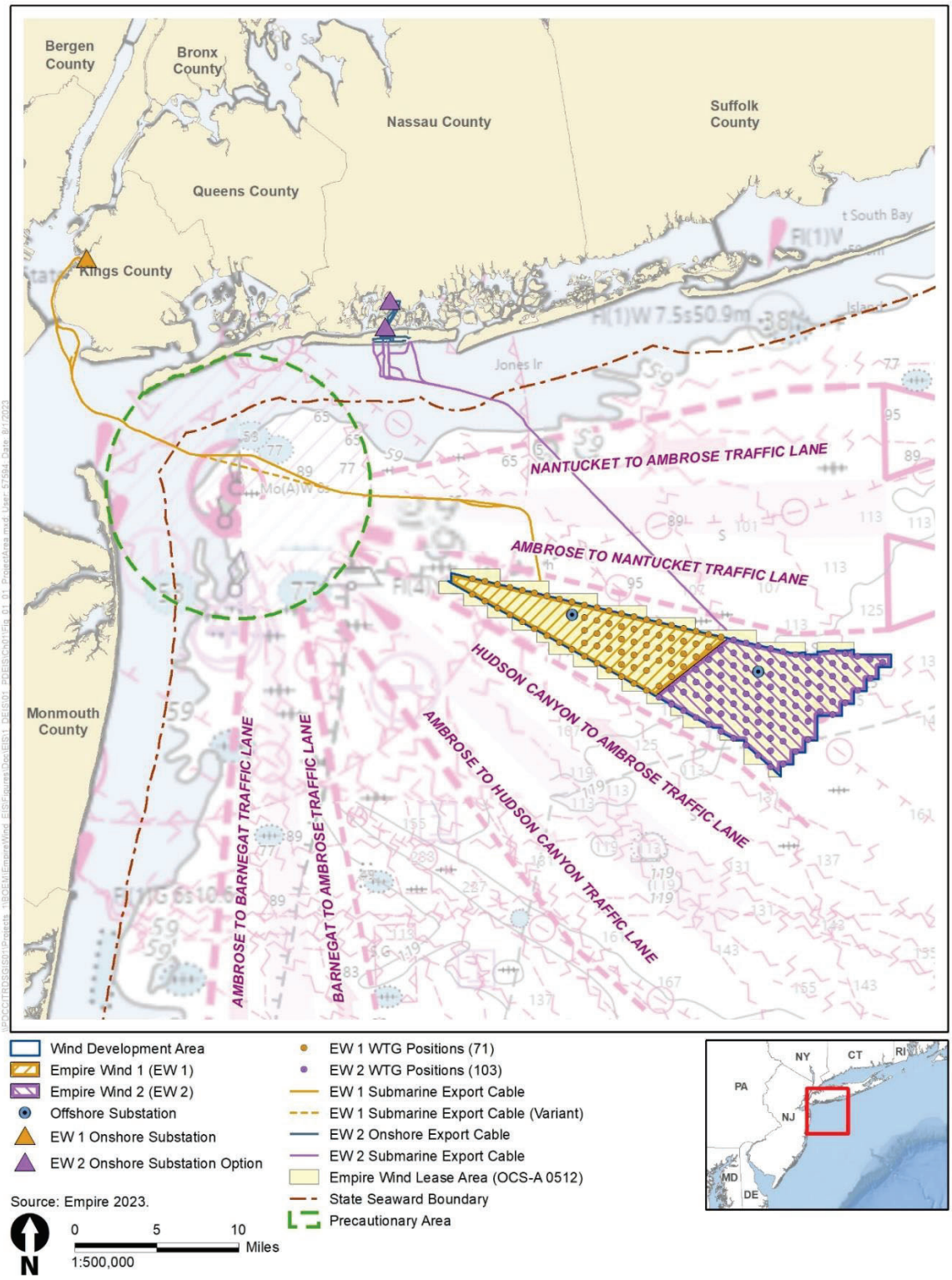

Figure 1-1 Proposed Project Area and Facilities

1.2. Authorities

The following summarizes BOEM's authority regarding the approval of the proposed Project, and NMFS' authority to authorize the incidental take by harassment of marine mammals incidental to the proposed Project. The Final EIS includes a description of consultations, authorizations, and permits related to the Project in Appendix A. The agencies adopting the Final EIS are those agencies that have defined authorizations and permitting responsibilities for the Project itself or for effects related to the Project. The NMFS MMPA LOA is briefly discussed in section 5.2 of this ROD. NMFS is serving as a cooperating agency pursuant to 40 CFR § 1501.8 because the scope of the Proposed Action and alternatives involves activities that could affect marine resources and due to its jurisdiction by law and special expertise. Issuance of an LOA under the MMPA triggers independent NEPA compliance obligations, which may be satisfied by adopting the Final EIS prepared by BOEM. Aside from BOEM and NMFS, additional agencies participated in the NEPA process as cooperating agencies and may sign their ROD and make their permitting decisions at a later time (e.g., USACE). Other cooperating or participating agencies either are not required to authorize the Project; have completed any authorizations that are required of them; or are performing actions that are exempt from NEPA (e.g., USEPA's Clean Air Act permitting) and, therefore, reviewed separately.

1.2.1. BOEM Authority

The Energy Policy Act of 2005, Pub. L. No. 109-58, amended OCSLA, 43 U.S.C. §§ 1331 *et seq*., by adding a new subsection 8(p) to authorize the Secretary of the Interior to issue leases, easements, and rights-of-way in the OCS for renewable energy development, including wind energy projects.

The Secretary delegated to BOEM the authority to decide whether to approve COPs. Final regulations implementing this authority were promulgated by BOEM's predecessor agency, the Minerals Management Service, on April 29, 2009. 74 Fed. Reg. 19,637 (Apr. 29, 2009). These regulations prescribe BOEM's responsibility for determining whether to approve, approve with modifications, or disapprove Empire's COP. In accordance with CEQ NEPA regulations, 40 C.F.R. Part 1501, BOEM served as the lead Federal agency for the preparation of the EIS.

The Secretary of the Interior's authorization must comply with OCSLA subsection 8(p)(4), 43 U.S.C. § 1337(p)(4), which "imposes a general duty on the Secretary to act in a manner providing for the subsection's [various policy] goals." Sol. Op. M-37067, "Secretary's Duties under Subsection 8(p)(4) of the Outer Continental Shelf Lands Act When Authorizing Activities on the Outer Continental Shelf" (Apr. 9, 2021). According to M-Opinion 37067, "[t]he subsection does not require the Secretary to ensure that the goals are achieved to a particular degree, and she retains wide discretion to determine the appropriate balance between two or more goals that conflict or are otherwise in tension."[3]

1.2.2. NMFS Authority

Sections 101(a)(5)(A) and (D) of the MMPA allow NMFS to authorize, upon request, the incidental, but not intentional, take of small numbers of marine mammals, including incidental take by harassment, provided certain determinations are made and statutory and regulatory procedures are

[3] M-Opinion 37067 at p. 5, http://doi.gov/sites/doi.gov/files/m-37067.pdf

met. 16 U.S.C. § 1371(a)(5)(A), (D). To authorize the incidental take of marine mammals, NMFS evaluates the best available scientific information to determine whether the take would have a negligible impact on affected species or stocks and whether the activity would have an unmitigable adverse impact on the availability of the species or stocks for subsistence use (if applicable). NMFS cannot issue an authorization if NMFS finds the taking would result in more than a negligible impact on marine mammal species or stocks or would result in an unmitigable adverse impact on the species or stocks for subsistence uses. NMFS must also prescribe the permissible methods of take and other means of effecting the least practicable adverse impact on the species or stocks of marine mammals and their habitat, paying particular attention to rookeries, mating grounds, and other areas of similar significance. All incidental take authorizations include additional requirements pertaining to monitoring and reporting.

Pursuant to Section 7(a)(2) of the Endangered Species Act (ESA), NMFS must also ensure that issuing the marine mammal incidental take authorization is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. 16 U.S.C. § 1536(a)(2).

For those marine mammal species that are listed under the ESA, NMFS Office of Protected Resources (OPR) must also consult with NMFS Greater Atlantic Regional Fisheries Office (GARFO) Protected Resources Division to receive an exemption for the take of those species and adhere to the requirements listed under Section 7 of the ESA to ensure that the MMPA-authorized incidental take is not likely to jeopardize the continued existence of those species. The ESA Section 7 consultation for this action resulted in issuance of a Biological Opinion (BiOp) that concluded the proposed Federal actions are not likely to jeopardize the continued existence of any ESA-listed species or result in the destruction or adverse modification of any critical habitat. The BiOp includes an Incidental Take Statement (ITS), which exempts that incidental take from ESA prohibitions subject to specified reasonable and prudent measures and implementing terms and conditions considered necessary and appropriate for NMFS OPR to minimize the effects of take on ESA-listed marine mammals. The BiOp and ITS also identify measures, which may be specific to the regulatory authorities of each action agency, to ensure compliance with the MMPA ITA with respect to the incidental take of ESA-listed marine mammals (i.e., measures in the Proposed Action and those identified as reasonable and prudent measures and terms and conditions, respectively).

NMFS promulgated regulations to implement the MMPA (50 C.F.R. Part 216), including application instructions for incidental take authorizations. Applicants must comply with these regulations, application instructions, and the MMPA. The decision being made by NMFS, including its decision to adopt BOEM's Final EIS, is discussed in section 5.2 of this ROD.

2. Proposed Project

2.1. Project Description

The Proposed Action would construct, operate, maintain, and decommission the 816-MW Empire Wind 1 (EW 1) Project and the 1,260-MW Empire Wind 2 (EW 2) Project within Lease Area OCS-A 0512 and associated export cables (Figure 1-1). EW 1 would consist of up to 57 wind turbine generators (WTGs), up to 116 nm (214 kilometers) of interarray cable, one offshore substation (OSS), a submarine export cable route of up to 41 nm (76 kilometers), a cable landfall at South Brooklyn Marine Terminal (SBMT), one onshore substation, and interconnection cable to the point of interconnection (POI) at Gowanus Substation in Brooklyn, New York. EW 2 would consist of up to 90 WTGs, up to 144 nm (267 kilometers) of interarray cable, one OSS, a submarine export cable route of up to 26 nm (48 kilometers), up to two out of four proposed cable landfalls in Long Beach or Lido Beach, New York, onshore cable route options, one onshore substation, and interconnection cable to a POI in Oceanside, New York. Development of the wind energy facility would occur within the range of design parameters described in Volume I of the Empire Offshore Wind: Empire Wind Project (EW 1 and EW 2) COP (Empire 2023), subject to applicable mitigation measures. The Final EIS considered the impacts resulting from the improvements to be performed to the SBMT as a connected action to the Project.

2.2. Purpose and Need for the Proposed Action

Through a competitive leasing process under 30 C.F.R. 585.211, Empire Wind was awarded Renewable Energy Lease Number OCS-A 0512 covering an area offshore New York (the Lease Area). Under the terms of the lease, Empire Wind has the exclusive right to submit a COP for activities within the Lease Area, and it has submitted a COP to BOEM proposing the construction and installation, operations and maintenance (O&M), and conceptual decommissioning of the Projects in accordance with BOEM's COP regulations under 30 C.F.R. 585.626, et seq..

Empire's stated goal is to construct and operate commercial-scale offshore wind energy facilities in the Lease Area. The Projects would contribute to New York's goal of 9 gigawatts (GW) of offshore wind energy generation by 2035 as outlined in the New York State Climate Leadership and Community Project Act, and likewise advance the goals of the 2015 New York State Energy Plan as amended on April 8, 2020. In furtherance of New York's goals, NYSERDA awarded its November 8, 2018, solicitation for 800 MW of offshore wind to Empire Wind and its 816-MW EW 1 Project on July 18, 2019, and NYSERDA awarded its July 21, 2020, solicitation for up to 2,500 MW of offshore wind to Empire Wind and its 1,260-MW EW 2 Project on January 13, 2021.[4]

[4] In June of 2023, Empire Wind, along with other parties, submitted petitions to the New York Public Service Commission seeking to amend the offshore renewable energy credit agreements that resulted from these solicitations (along with other analogous agreements) to account for unforeseen economic conditions that resulted in cost increases for both EW1 and EW2. On October 12, 2023, the commission denied these petitions, and shortly thereafter, NYSERDA issued a Request for Information to support an expedited solicitation. Empire has stated to BOEM its intention to participate in NYSERDA's solicitation. As of the date of this ROD, Empire has not amended its COP nor otherwise changed its goa1 of developing the proposed projects, which are expected to be considered by NYSERDA in its upcoming solicitation. If that solicitation results in changes to the COP that are outside the proposed project design envelope or inconsistent with the selected alternative, BOEM would require revisions to Empire's COP.

Based on BOEM's authority under the OCSLA to authorize renewable energy activities on the OCS; Executive Order 14008; the Administration's goal to deploy 30 GW of offshore wind energy capacity in the United States by 2030 while protecting biodiversity and promoting ocean co-use;[5] and in consideration of Empire's goal; the purpose of BOEM's action is to determine whether to approve, approve with modifications, or disapprove Empire's COP. BOEM is making this determination after weighing the factors in subsection 8(p)(4) of the OCSLA that are applicable to plan decisions and in consideration of the above goals. BOEM's action is needed to fulfill its duties under the lease, which require BOEM to make a decision on the Lessee's plans to construct and operate a commercial-scale offshore wind energy facility within the Lease Area (the Proposed Action).

NMFS, which has MMPA authorization decision responsibilities and is serving as a cooperating agency, has reviewed BOEM's purpose and need statement above and has determined that it aligns with NMFS' purpose and need (more specific statements of the purpose and need for the actions by NMFS are found in section 5.2 of this ROD).

[5] Fact Sheet: Biden Administration Jumpstarts Offshore Wind Energy Projects to Create Jobs | The White House. Interior, Energy, Commerce, and Transportation Departments Announce New Leasing, Funding, and Development Goals to Accelerate and Deploy Offshore Wind Energy and Jobs:: https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/29/fact-sheet-biden-administration-jumpstarts-offshore-wind-energy-projects-to-create-jobs/. See also § 207 of E.O. 14008, Tackling Climate Change at Home and Abroad, 86 Fed. Reg. 7619 (Feb. 1, 2021) ("doubling offshore wind by 2030 while ensuring robust protection for our lands, waters, and biodiversity and creating good jobs").

3. Alternatives

The Final EIS considered a reasonable range of alternatives to the Proposed Action.[6] BOEM carried forward eight action alternatives for detailed analysis (one of which includes sub-alternatives) and the No Action Alternative. Other action alternatives were considered but not analyzed further because they did not meet the purpose and need or did not meet other screening criteria. Refer to Final EIS, section 2.2, *Alternatives Considered but not Analyzed in Detail*.

3.1 Alternatives Carried Forward for Detailed Analysis

Table 3-1 Description of Alternatives

Alternative	Description
No Action Alternative	Under the No Action Alternative, BOEM would not approve the COP. Construction and installation, O&M, and conceptual decommissioning of the 816-MW EW 1 Project and the 1,260-MW EW 2 Project would not occur, and no additional permits or authorizations for the Projects would be required.[7] Any potential environmental and socioeconomic impacts, including benefits, associated with the Projects as described under the Proposed Action would not occur. The current resource condition, trends, and effects from ongoing activities under the No Action Alternative serve as the baseline against which all action alternatives are evaluated. Over the life of the proposed Projects, other reasonably foreseeable future impact-producing offshore wind and non-offshore wind activities are expected to occur, which would cause changes to the existing baseline conditions even in the absence of the Proposed Action. The continuation of all other existing and reasonably foreseeable future activities described in Final EIS, Appendix F (*Planned Activities Scenario*) without the Proposed Action serves as the baseline for the evaluation of cumulative impacts.
Alternative A: Proposed Action	Under Alternative A, the Proposed Action, the construction, O&M, and conceptual decommissioning of the 816-MW EW 1 Project and the 1,260-MW EW 2 Project within Lease Area OCS-A 0512 and associated export cables would occur within the range of design parameters outlined in the COP, subject to applicable mitigation measures. EW 1 would consist of up to 57 WTGs, up to 116 nm (214 kilometers) of interarray cable, one OSS, a submarine export cable route of up to 41 nm (76 kilometers), a cable landfall at SBMT, one onshore substation, and interconnection cable to the POI at Gowanus Substation in Brooklyn, New York. EW 2 would consist of up to 90 WTGs, up to 144 nm (267 kilometers) of interarray cable, one OSS, a submarine export cable route of up to 26 nm (48 kilometers), up to two out of four proposed cable landfalls in Long Beach or Lido Beach, New York, onshore cable route options, one of two proposed onshore substations, and interconnection cable to a POI in Oceanside, New York. The Proposed Action wind turbine layout includes the following requirements to reduce impacts on navigation safety and preserve fishing opportunity: • 1-nm setback from the Traffic Separation Scheme • Southern perimeter WTG positions aligned with Hudson Canyon to Ambrose traffic lane • North-south search and rescue lanes across the Lease Area

[6] DOI's implementing NEPA regulations state that the term "reasonable alternatives" "includes alternatives that are technically and economically practical or feasible and meet the purpose and need of the proposed action." 43 C.F.R. § 46.420(b).

[7] Under the No Action Alternative, impacts on marine mammals incidental to construction activities would not occur. Therefore, NMFS would not issue the requested authorization under the MMPA to the Applicant.

Alternative	Description
	• Minimum WTG spacing of 0.65 nm[8] • Grid orientation facilitating southwest-to-northeast trawling • Open area in the northwestern portion of the Lease Area to reduce conflicts with squid fisheries
Alternative B: Remove Up to Six WTG Positions from the Northwest End of EW 1	Under Alternative B, Remove Up to Six WTG Positions from the Northwest End of EW 1, the construction, O&M, and conceptual decommissioning of the 816-MW EW 1 Project and the 1,260-MW EW 2 Project within Lease Area OCS-A 0512 and associated export cables would occur within the range of design parameters outlined in the COP, subject to applicable mitigation measures. However, the EW 1 turbine layout would be modified to remove up to six WTG positions from the northwestern end of EW 1 to reduce potential impacts at the edge of Cholera Bank on scenic resources and on navigation safety. Alternative B would also establish a No Surface Occupancy area where WTG positions would be excluded. Submarine export and interarray cables are not excluded from the No Surface Occupancy area. Between the Draft EIS and Final EIS, Empire Wind completed additional site investigations and studies to quantify the extent of glauconite deposits across the Lease Area as well as their potential impact on pile drivability. The pile drivability analyses determined that 22 of the 71 positions analyzed in EW 1 pose a high risk of pile refusal, leaving 49 suitable positions for WTG installation that include the six WTG positions identified for removal under Alternative B. BOEM and NREL independently reviewed Empire's analysis and, based on this review, determined that Alternative B would no longer meet the purpose and need because selection of Alternative B would not allow Empire Wind to install the minimum number of WTGs necessary to fulfill Empire's contractual obligations with NYSERDA.
Alternative C: EW 1 Submarine Export Cable Route	Under Alternative C, EW 1 Submarine Export Cable Route, the construction, O&M, and conceptual decommissioning of the 816-MW EW 1 Project and the 1,260-MW EW 2 Project within Lease Area OCS-A 0512 and associated export cables would occur within the range of design parameters outlined in the COP, subject to applicable mitigation measures. However, BOEM would approve only one of the two EW 1 submarine export cable route options that would traverse either the Gravesend Anchorage Area or the Ambrose Navigation Channel on the approach to SBMT. Each of the below sub-alternatives may be individually selected or combined with any or all other action alternatives or sub-alternatives. • Alternative C-1: Gravesend Anchorage Area. In the vicinity of Gravesend Bay, the EW 1 submarine export cable route would traverse a charted anchorage area identified on NOAA Chart 12402 for the Port of New York (U.S. Coast Guard Anchorage #25). • Alternative C-2: Ambrose Navigation Channel. In the vicinity of Gravesend Bay, the EW 1 submarine export cable route would traverse the Ambrose Navigation Channel.
Alternative D: EW 2 Submarine Export Cable Route Options to Minimize Impacts on the Sand Borrow Area	Under Alternative D, EW 2 Submarine Export Cable Route Options to Minimize Impacts on the Sand Borrow Area, the construction, O&M, and conceptual decommissioning of the 816-MW EW 1 Project and the 1,260-MW EW 2 Project within Lease Area OCS-A 0512 and associated export cables would occur within the range of design parameters outlined in the COP, subject to applicable mitigation measures. However, BOEM would only approve submarine export cable route options for EW 2 that avoid the sand borrow area offshore Long Island by at least 500 meters.
Alternative E: Setback between EW 1 and EW 2	Under Alternative E, Setback between EW 1 and EW 2, the construction, O&M, and conceptual decommissioning of the 816-MW EW 1 Project and the 1,260-MW EW 2 Project within Lease Area OCS-A 0512 and associated export cables would occur within the range of design parameters outlined in the COP, subject to applicable mitigation measures. Alternative

[8] The ideal spacing for U.S. Coast Guard aviation assets to conduct search and rescue operations is at least 1 nm between WTGs.

Alternative	Description
	E would remove seven WTG positions from EW 2 to create a 1-nm setback between the EW 1 and EW 2 Projects to improve access for fishing. Between the Draft EIS and Final EIS, Empire Wind completed additional site investigations and studies to quantify the extent of glauconite deposits across the Lease Area as well as their potential impact on pile drivability. BOEM and NREL independently reviewed Empire's analysis and, based on this review, determined that Alternative E would no longer meet the purpose and need because selection of Alternative E would not allow Empire Wind to install the minimum number of WTGs necessary to fulfill Empire's contractual obligations with NYSERDA.
Alternative F: Wind Resource Optimization with Modifications for Environmental and Technical Considerations	Under Alternative F, Wind Resource Optimization with Modifications for Environmental and Technical Considerations, the construction, O&M, and conceptual decommissioning of the 816-MW EW 1 Project and the 1,260-MW EW 2 Project within Lease Area OCS-A 0512 and associated export cables would occur within the range of design parameters outlined in the COP, subject to applicable mitigation measures. However, the wind turbine layout would be optimized to maximize annual energy production and minimize wake loss while addressing geotechnical considerations. Geotechnical site investigations and laboratory studies have shown that the geotechnical properties of glauconite make it an extremely difficult material to build upon, specifically for the installation of fixed-bottom foundations that support offshore wind turbine towers. Empire Wind performed site investigations and studies to quantify the extent of glauconite deposits across the Lease Area as well as their potential impact on pile drivability. An indicative WTG and interarray cable layout for Alternative F based on the pile drivability analysis is shown on Final EIS **Error! Reference source not found.**. This layout m ay be further refined (within the limits of the COP PDE) based on additional review of geotechnical constraints related to the presence of glauconite in the Lease Area.
Alternative G: Cable Bridge Crossing of Barnums Channel Adjacent to Long Island Railroad Bridge	Under Alternative G, Cable Bridge Crossing of Barnums Channel Adjacent to Long Island Railroad Bridge, the construction, O&M, and conceptual decommissioning of the 816-MW EW 1 Project and the 1,260-MW EW 2 Project within Lease Area OCS-A 0512 and associated export cables would occur within the range of design parameters outlined in the COP, subject to applicable mitigation measures. However, EW 2 would use an above-water cable bridge to construct the onshore export cable crossing at Barnums Channel.
Alternative H: Dredging for EW 1 Export Cable Landfall	Under Alternative H, Dredging for EW 1 Export Cable Landfall, the construction, O&M, and conceptual decommissioning of the 816-MW EW 1 Project and the 1,260-MW EW 2 Project within Lease Area OCS-A 0512 and would occur within the range of design parameters outlined in the COP, subject to applicable mitigation measures. However, construction of the EW 1 export cable landfall would use a method of dredge or fill activities (clamshell dredging with environmental bucket) that would reduce the discharge of dredged material compared to other dredging options considered in the Empire Wind PDE (i.e., open cut trenching/jetting, suction hopper dredging, hydraulic dredging) (COP Section 3.4.2.1; Empire 2023).

NREL = National Renewable Energy Laboratory

3.2. Environmental Consequences of Alternatives

Table 3-2 summarizes and compares the potential impacts from the proposed Projects under each action alternative assessed in Chapter 3 of the Final EIS. Under the No Action Alternative, BOEM would not approve the COP and any potential environmental and socioeconomic impacts associated with the Project, including both adverse impacts and benefits, would not occur. However, as described under the cumulative impact analysis in Chapter 3, impacts from other activities could still occur. As described in more detail in Chapters 2 and 3 of the Final EIS, the impacts summarized in the following table reflect BOEM's analysis of the Proposed Action as well as activities proposed by Empire Wind and the New York City Economic Development Corporation (NYCDEC) to upgrade the SBMT in a separate application to the State and to the USACE. In addition to incorporating a

discussion of the impacts resulting from SBMT upgrades where relevant throughout the Final EIS, BOEM included the Appendix Q, which consisted of the "Environmental Analysis of the South Brooklyn Marine Terminal Port Infrastructure Improvement Project," prepared by Empire Wind and NYCDEC, dated May 2023, and which was intended to inform both federal agencies under NEPA and New York state and local agencies under New York's State Environmental Quality Act. Since publication of the Final EIS, Empire Wind and NYCDEC have prepared an updated version of that Environmental Analysis,[9] which included additional and refined information on traffic data. The updated information did not change any of the conclusions regarding impact to any resource from the version that published in Appendix Q of the Final EIS. BOEM has considered the updated information and determined that the new or updated information is not significant new information that warrants a supplement to the Final EIS under 40 C.F.R. § 1502.9.

[9]Environmental Analysis of the South Brooklyn Marine Terminal Port Infrastructure Improvement Project, available at https://www.boem.gov/renewable-energy/state-activities/vol6partaenvironmentalassessmentform-0]

Table 3-2 Comparison of Impacts by Alternative

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
3.4 Air Quality	Under the No Action Alternative, air quality would continue to follow current regional trends and respond to IPFs introduced by other ongoing activities. Ongoing non-offshore wind activities would have continuing regional impacts primarily through air pollutant emissions and accidental releases. Impacts of ongoing non-offshore wind activities, including air pollutant emissions and GHGs, would be **moderate** because the emissions would incrementally increase ambient pollutant concentrations, though not by enough to cause a violation of the NAAQS, New Jersey AAQS, or New York AAQS or contribute substantially to an existing violation. Planned non-offshore wind activities may also contribute to impacts on air quality because air pollutant and GHG emissions would increase through construction and operation of new energy generation facilities to meet future power demands. BOEM expects the cumulative impact of ongoing and planned activities other than offshore wind to result in **moderate** impacts on air quality, primarily driven by recent market and permitting trends indicating future fossil-	Under the Proposed Action, air quality impacts would occur due to emissions associated with construction, O&M, and eventual decommissioning, but these impacts would be relatively small and limited in duration. Impacts would be **minor** because the emissions would incrementally increase ambient pollutant concentrations, though not by enough to cause a violation of the NAAQS, New Jersey AAQS, or New York AAQS or contribute substantially to an existing violation. There would be a **minor beneficial** impact [3] on air quality in the region overall to the extent that energy produced by the Projects would displace energy produced by fossil-fueled power plants. The Proposed Action would result in air quality–related health effects avoided in the region due to the reduction in emissions associated with fossil-fueled energy generation. Cumulative impacts of the Proposed Action along with ongoing and planned non-offshore wind activities as well as ongoing and planned offshore wind activities would be **moderate** because the emissions would incrementally increase ambient pollutant concentrations, although not by enough to cause a violation of the	Alternatives B, E, F, and the Preferred Alternative would remove specific WTG positions but would not alter the maximum number of WTGs that could be installed within the PDE. Construction, O&M, and decommissioning emissions, and the associated impacts, could be less than for the Proposed Action to the extent that the number of WTGs were reduced. Regional benefits due to reduced emissions associated with fossil-fueled energy generation could be less than with the Proposed Action to the extent that a reduced number of WTGs would reduce total generating capacity. Alternatives G and H would have the same number of WTGs and OSS as the Proposed Action but would use an alternate onshore export cable route that would use a cable bridge to cross Barnums Channel or an alternate method of dredge and fill activities at SBMT. Air quality impacts under Alternatives G and H are expected to be similar to those for the Proposed Action: minor adverse and minor beneficial. BOEM anticipates that the overall impacts associated with the Proposed Action and the other action alternatives including the Preferred Alternative when combined with the impacts from ongoing and planned activities would be **moderate adverse** and **moderate beneficial**. The overall adverse impact on air quality would likely be moderate because pollutant concentrations are not expected to exceed the NAAQS, New Jersey AAQS, or New York AAQS. The Proposed Action and the other action alternatives including the Preferred Alternative and other offshore wind projects would benefit air quality in the region surrounding the Projects to the extent that energy produced by the Projects would displace energy

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
	fueled electric generating units would most likely include natural-gas-fired facilities. BOEM anticipates that the ongoing activities combined with all other planned activities (including other offshore wind activities) would result in **moderate** adverse impacts due to emissions of criteria pollutants, VOCs, HAPs, and GHGs, mostly released during construction and decommissioning, because these emissions would incrementally increase ambient pollutant concentrations (more than would activities without offshore wind or offshore wind alone), although not by enough to cause a violation of the NAAQS, New Jersey AAQS, or New York AAQS or contribute substantially to an existing violation. Offshore wind projects likely would lead to reduced emissions from fossil-fueled power generating facilities and consequently **minor** to **moderate beneficial** impacts on air quality and climate.	NAAQS, New Jersey AAQS, or New York AAQS or contribute substantially to an existing violation. BOEM expects **moderate beneficial** impacts[2] on regional air quality and climate after the Proposed Action and other offshore wind projects are operational because these projects likely would lead to reduced emissions from fossil-fueled power generating facilities.	produced by fossil-fueled power plants. BOEM anticipates an overall moderate beneficial impact because the magnitude of this potential reduction would be small relative to total energy generation emissions in the area.
3.5 Bats	Continuation of existing environmental trends and activities under the No Action Alternative would result in **negligible** impacts on bats. The No Action Alternative combined with all planned activities (including other offshore wind activities) would result in	The Proposed Action would have **negligible** impacts on bats, especially if tree clearing is conducted outside of the active season. The primary risks would be from potential onshore removal of habitat and operation of offshore WTGs; however, occurrence of bats offshore is low, and mortality is	Alternatives B, E, and F would have the same number of WTGs as the Proposed Action, which would result in the same impacts on bats; the overall impact level would not change—**negligible**. Alternative C, D, or G would not materially change the analysis compared to the Proposed Action because the cable route options that would be constructed under these alternatives are already covered under the Proposed Action as part of the

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
	negligible impacts because bat presence on the OCS is anticipated to be limited and onshore bat habitat impacts are expected to be minimal.	anticipated to be rare in the onshore or offshore environment. BOEM would also require Empire Wind to make recommendations for new mitigation or monitoring should Empire's Bird and Bat Monitoring Framework indicate bat impacts offshore have deviated from the analysis in the EIS. BOEM anticipates that the cumulative impact of the Proposed Action in combination with ongoing and planned activities (including offshore wind activities) would result in **negligible** impacts on bats in the geographic analysis area.	PDE approach. Therefore, the overall impact level on bats would not change—**negligible**. Under Alternative H, an alternative method of dredge and fill activity would occur in waters around the SBMT, which would not materially change the analysis of any IPF compared to the Proposed Action because the Onshore Project area is heavily developed with no bat habitat. Therefore, the overall impact level on bats would not change—**negligible**. In context of reasonably foreseeable environmental trends, the cumulative impacts of Alternatives B, C, D, E, F, G, and H when each is combined with the impacts from ongoing and planned activities would be the same as for the Proposed Action—**negligible**. As with the Proposed Action, construction, O&M, and decommissioning of the Preferred Alternative would have **negligible** impacts on bats, especially if conducted outside the active season, due to their low occurrence offshore. Mitigation recommended for inclusion in the Preferred Alternative is analyzed in Section 3.5.11.
3.6 Benthic Resources	Continuation of existing environmental trends and activities under the No Action Alternative would result in **negligible** to **moderate**[1] impacts on benthic resources. The No Action Alternative, when combined with all planned activities (including other offshore wind activities), would result in **moderate** adverse impacts and could potentially include **moderate beneficial** impacts resulting from emplacement of structures (habitat conversion).	The Proposed Action would have **negligible** to **moderate**[1] adverse impacts and **moderate beneficial** impacts on benthic resources. Adverse impacts would primarily result from new cable emplacement, pile-driving noise, anchoring, and the presence of structures. Beneficial impacts would result from the presence of new structures. The cumulative impact of the Proposed Action and the connected action in combination with ongoing and planned activities would range from **negligible** to **moderate** and **moderate beneficial**.	Alternatives C, D, E, F, G, and H would have the same **negligible** to **moderate**[1] adverse impacts and **moderate beneficial** impacts on benthic resources as described under the Proposed Action. Adverse impacts would primarily result from new cable emplacement, pile-driving noise, anchoring, and the presence of structures. Beneficial impacts would result from the presence of new structures. Alternative B would result in fewer impacts on Cholera Bank, an important fishing area, due to the removal of up to six WTG positions from the northwestern end of EW 1. Alternatives E and F would improve access for fishing; however, the resultant increase in vessel traffic through the Project area compared to the Proposed Action could increase the occurrence of accidental releases of fuels/fluids/hazardous materials and trash and debris and permitted discharges within the Project

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
			area. Alternatives C-1, C-2, and D were included as part of the PDE and maximum-case scenarios evaluated for the Proposed Action and therefore do not represent any change from the Proposed Action for benthic resources. Alternative G would involve changes to only the onshore portion of the EW 2 export cable route, and therefore the impact of Alternative G on benthic resources would be the same as that of the Proposed Action. Under Alternative H, construction at the SBMT would use an alternate method of dredge or fill activities that would reduce the discharge of dredged material compared to other dredging options considered in the PDE. This alternate method would reduce releases of contaminants to the benthic environment; however, other cable emplacement activities for EW 1 and EW 2 submarine export cables and interarray cables would occur within the PDE for the Proposed Action and the overall impacts of Alternative H would be similar to those of the Proposed Action. Cumulative impacts of Alternatives B, C, D, E, F, G, and H when each is combined with the impacts from ongoing and planned activities would be the same as for the Proposed Action—**negligible** to **moderate adverse**[1] and **moderate beneficial**. Overall, the Preferred Alternative would be similar to the Proposed Action in terms of impacts on benthic resources and would result in **negligible** to **moderate**[1] adverse impacts and **moderate beneficial** impacts on benthic resources in the geographic analysis area. Mitigation recommended for inclusion in the Preferred Alternative is analyzed in Section 3.6.11.
3.7 Birds	Continuation of existing environmental trends and activities under the No Action Alternative would result in **minor** adverse impacts on birds.	The Proposed Action would have **minor** adverse impacts on birds, primarily associated with habitat loss and collision-induced mortality from rotating WTGs and permanent	Alternatives B, E, and F would have the same number of WTGs as the Proposed Action, which would result in the same impacts on species with high collision sensitivity and high displacement sensitivity; the overall impact level would not

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
	The No Action Alternative combined with all planned activities (including offshore wind activities) would have a **moderate** adverse impact on birds but could include **moderate beneficial** impacts because of the presence of offshore structures.	habitat loss and conversion from onshore construction. **Minor beneficial** impacts would result from increased foraging opportunities for marine birds. BOEM would also require Empire Wind to make recommendations for new mitigation or monitoring should Empire's Bird and Bat Monitoring Framework indicate bird impacts offshore have deviated from the analysis in the EIS. The cumulative impact of the Proposed Action in combination with ongoing and planned activities (including offshore wind activities) would be **moderate** impacts, as well as **moderate beneficial** impacts.	change—**minor** with **minor beneficial** impacts. Alternative C, D, or G would not materially change the analysis compared to the Proposed Action because the cable route options that would be constructed under these alternatives are already covered under the Proposed Action as part of the PDE approach. Therefore, the overall impact level would not change—**minor** with **minor beneficial** impacts. Under Alternative H, an alternative method of dredge and fill activity would occur in waters around the SBMT, which would not materially change the analysis of any IPF compared to the Proposed Action because the Onshore Project area is heavily developed with little or no bird habitat. Therefore, the overall impact level would not change—**minor** with **minor beneficial** impacts. Considering all the IPFs together, BOEM anticipates that the cumulative impact of Alternatives B, C, D, E, F, G, and H to the impacts from ongoing and planned activities would result in **moderate** and **moderate beneficial** impacts on birds in the geographic analysis area. As with the Proposed Action (Alternative A), activities associated with the construction, installation, O&M, and eventual decommissioning of the Preferred Alternative would have **minor** impacts on birds, depending on the location, timing, and species affected by an activity. Mitigation recommended for inclusion in the Preferred Alternative is analyzed in Section 3.7.11.
3.8 Coastal Habitat and Fauna	Continuation of existing environmental trends and activities under the No Action Alternative would result in **moderate** impacts on coastal habitat and fauna, primarily driven by climate change. Currently, there are no other offshore wind activities proposed in the geographic analysis area.	The Proposed Action would have **minor** impacts on coastal habitat and fauna due to small, isolated areas of habitat that could be affected within the urbanized landscape that dominates the geographic analysis area. The cumulative impact of the Proposed Action in combination with ongoing and planned activities	Because Alternatives B, C, D, E, and F involve modifications only to offshore components, and because Alternative G is already covered under the Proposed Action as part of the PDE approach, impacts on coastal habitat and fauna from those alternatives would be the same as those under the Proposed Action: **minor**. Under Alternative H, an alternative method of dredge and fill activity would occur in waters around the SBMT, which would not materially change the

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
		(including offshore wind activities) would result in **moderate** impacts on coastal habitat and fauna in the geographic analysis area.	analysis of any IPF compared to the Proposed Action because the Onshore Project area is heavily developed with little or no habitat. Therefore, the overall impact level would not change—**minor**. In context of reasonably foreseeable environmental trends, the cumulative impact of Alternatives B, C, D, E, F, G, and H on individual IPFs in combination with ongoing and planned activities would be the same as that of the Proposed Action: **minor**. Considering all the IPFs together, BOEM anticipates that the cumulative impact of Alternative B, C, D, E, F, G, or H in combination with ongoing and planned activities would result in **moderate** impacts on coastal habitats and fauna in the geographic analysis area. Ongoing and planned activities contributing to impacts on coastal habitats and fauna in the geographic analysis area include climate change and habitat impacts. Overall, the Preferred Alternative would be similar to the Proposed Action in terms of impacts on coastal habitat and fauna. Accordingly, impacts of the Preferred Alternative alone would remain the same as those of the Proposed Action: **minor**.
3.9 Commercial Fisheries and For-Hire Recreational Fishing	Continuation of existing environmental trends and activities under the No Action Alternative would result in **moderate** to **major** impacts on commercial fisheries and **minor** to **moderate** impacts on for-hire recreational fishing fishing[2], depending on the fishery and fishing vessel. The No Action Alternative combined with all planned activities (including other offshore wind activities) would result in a **major** adverse cumulative impact	The Proposed Action would have an overall **moderate** to **major** adverse impact on commercial fisheries and **minor** to **moderate** impacts on for-hire recreational fishing. The moderate impact rating is primarily driven by the presence of structures. The impacts of the Proposed Action could also include long-term **minor beneficial** impacts for some for-hire recreational fishing operations due to the artificial reef effect. The Proposed Action would contribute an appreciable increment to the **major** cumulative impact on	*Commercial Fisheries* Alternatives B, E, and F would remove specific WTG positions from the Lease Area and are expected to result in an expansion of commercial fishing activity and a reduction in adverse impacts on commercial fisheries relative to other action alternatives, including the Proposed Action. Alternative G would provide a slight indirect benefit to commercial fisheries by using a cable bridge to cross Barnums Channel, reducing the impact on nursery habitat for some commercially harvested species, but the area of tidal wetlands avoided by this alternative would be small and is not expected to produce a measurable reduction in impacts on commercial fisheries relative to other action alternatives. Alternatives C and D would change the

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
	because some commercial fisheries and fishing operations would experience substantial long-term disruptions. This impact rating is primarily driven by the presence of offshore structures, regulated fishing effort, and climate change.	commercial fisheries and for-hire recreational fishing fishing[2], depending on the fishery and fishing vessel. from the combination of the Proposed Action and other ongoing and planned activities (including offshore wind activities).	alignment of the nearshore portion of the export cable routes but would not have any direct impact (adverse or beneficial) on commercial fisheries relative to the other action alternatives. Alternatives B, E, and F would have an overall **moderate** to **major** adverse impact on commercial fisheries[2]. *For-Hire Recreational Fisheries* Alternatives C and D would change the alignment of the nearshore portion of the export cable routes but would not have any direct impact (adverse or beneficial) on for-hire recreational fisheries relative to the other action alternatives. Installation of WTGs would have beneficial effects for for-hire recreational fishing due to reef effects. Alternatives B, E, and F would remove specific WTG positions but would not alter the maximum number of WTGs that could be installed within the PDE. Alternatives B and F would remove WTG positions that are closest to shore and therefore most accessible to recreational fishing vessels. Alternatives B, E, and F would have overall **minor** to **moderate** adverse impacts on for-hire recreational fishering[2] and **minor beneficial** impacts for some for-hire recreational fishing operations due to the artificial reef effect. *Preferred Alternative* The Preferred Alternative would reduce impacts on commercial and for-hire recreational fisheries by removing WTG positions from a contiguous area of EW 1 and avoiding cable routing in the Ambrose Navigation Channel. Mitigation recommended for inclusion in the Preferred Alternative is analyzed in Section 3.9.11.

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
3.10 Cultural Resources	Continuation of existing environmental trends and activities under the No Action Alternative would result in **minor** to **major**[2] impacts on cultural resources, primarily as a result of onshore ground-disturbing activities, the introduction of intrusive visual elements, dredging, cable emplacement, and activities that disturb the seafloor. The No Action Alternative combined with all planned activities (including other offshore wind activities) would result in **moderate** impacts on cultural resources.	The Proposed Action would have **negligible** to **major**[2] impacts on cultural resources primarily from the introduction of intrusive visual elements, which alter character-defining ocean views of historic properties onshore that contribute to the resource's eligibility for the NRHP and result in a loss of historic or cultural value; and dredging, cable emplacement, and activities that disturb the seafloor, which result in damage to or destruction of submerged archaeological sites or other underwater cultural resources (e.g., shipwreck, debris fields, ancient submerged landforms) from offshore bottom-disturbing activities, resulting in a loss of scientific or cultural value. The Proposed Action would contribute an appreciable increment to the **major** impacts on cultural resources from the combination of the Proposed Action and other ongoing and planned activities (including offshore wind activities).	Modifications under Alternatives B, C, D, E, F, G, and H, or the combination of alternatives that compose the Preferred Alternative, are not anticipated to result in substantive differences in impacts on cultural resources as compared to the Proposed Action and would therefore result in similar impacts as the Proposed Action. Mitigation recommended for inclusion in the Preferred Alternative is analyzed in Section 3.10.13. In context of reasonably foreseeable environmental trends, the contribution of Alternatives B, C, D, E, F, G, and H to the impacts of individual IPFs from ongoing and planned activities would be the same as that of the Proposed Action.
3.11 Demographics Employment, and Economics	Continuation of existing environmental trends and activities under the No Action Alternative would result in **negligible** to **minor** adverse impacts and **minor beneficial** impacts on demographics, employment, and economics. The No Action Alternative combined with all planned activities (including other offshore wind activities) would result in	The Proposed Action would have **negligible** adverse and **minor** to **moderate**[1] **beneficial** impacts on demographics, employment, and economics. Overall, the impacts of the Proposed Action would be **negligible** and **minor beneficial**. Cumulative impacts of the Proposed Action, combined with all ongoing and planned activities (including other	Alternatives B, E, and F would remove specific WTG positions but would not alter the maximum number of WTGs that could be installed within the PDE and still maintain **negligible** adverse economic impacts. Alternatives C, D, and G would also be expected to have **negligible** adverse impacts on the economy as a result of the alternative submarine or onshore cable routes. Similarly, Alternative H is anticipated to have **negligible** adverse economic impacts. Alternative H proposes an alternate method of dredge or fill during SBMT construction that would require a permit from USACE and have

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
	negligible to **minor** adverse and **moderate beneficial** impacts.	offshore wind activities) would be **negligible** to **minor**[1] adverse and **moderate beneficial**.	minimal impact on the aquatic ecosystem. In context of reasonably foreseeable environmental trends, the incremental impacts associated with Alternatives B, C, D, E, F, G, and H when each is combined with the impacts of ongoing and planned activities would be the same as for the Proposed Action— **negligible** to **minor**[1] adverse and **moderate beneficial.** Overall, the Preferred Alternative would be similar to the Proposed Action in terms of impacts on demographics, employment, and economics including new hiring and economic activity. Accordingly, impacts of the Preferred Alternative alone would remain of the same level as for the Proposed Action (negligible along with minor beneficial).
3.12 Environmental Justice	Continuation of existing environmental trends and activities under the No Action Alternative would result in **moderate** impacts on environmental justice populations. The No Action Alternative combined with all planned activities (including other offshore wind activities) would result in **moderate** impacts because environmental justice populations would have to adjust somewhat to account for disruptions due to notable and measurable adverse impacts.	Impacts of the Proposed Action on environmental justice populations would range from minor to moderate adverse to minor beneficial. Impacts of onshore construction related to the IPFs of air emissions, land disturbance, noise, and traffic would range from minor to moderate, with moderate impacts resulting from impact pile driving and vibratory pile driving for construction of onshore substations, the O&M facility, cable bridge, bulkheads, and cofferdams. Impacts of onshore construction activities would be distributed across areas with and without environmental justice populations and would not disproportionately affect environmental justice populations. There may also be moderate impacts associated with port utilization. Potential minor	Because Alternatives B, C, D, E, and F involve modifications only to offshore components, and because Alternative G is already covered under the Proposed Action as part of the PDE approach, impacts on environmental justice populations from those alternatives would be the same as under the Proposed Action and are expected to be **minor** to **moderate**. Under Alternative H, an alternative method of dredge and fill activity would occur in waters around the SBMT, which would not materially change the analysis of any IPF compared to the Proposed Action. Therefore, impacts on environmental justice populations from Alternative H would be the same as under the Proposed Action and are expected to be **minor** to **moderate**. In context of reasonably foreseeable environmental trends, the cumulative impact of Alternatives B, C, D, E, F, G, and H in combination with ongoing and planned activities would be the same as that of the Proposed Action: **moderate**. Overall, the Preferred Alternative would be similar to

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
		beneficial impacts would result from port utilization and the enhanced employment opportunities. Overall, BOEM expects that impacts of the Proposed Action on environmental justice populations would be **minor** to **moderate**, and **minor beneficial**[1]. The Proposed Action would not result in disproportionately "high and adverse" impacts on environmental justice populations. The cumulative impacts of the Proposed Action in combination with other ongoing and planned activities are anticipated to be **moderate** adverse due to the cumulative effects of ongoing and planned activities on air quality, ambient sound levels, land disturbance, traffic, and gentrification pressure across the geographic analysis area and substantial presence of environmental justice populations in the New York City area and near ports that would be used for the Projects.	the Proposed Action regarding impacts on environmental justice populations. As a result, the impacts of the Preferred Alternative alone would remain the same as those of the Proposed Action: **minor** to **moderate** overall, with **minor beneficial** impacts, and would not be disproportionately high and adverse.
3.13 Finfish, Invertebrates, and Essential Fish Habitat	Continuation of existing environmental trends and activities under the No Action Alternative would result in **negligible** to **moderate** adverse impacts on finfish, invertebrates, and EFH. The No Action Alternative combined with all planned activities (including other offshore wind activities) would result in **minor** to **moderate**[1] cumulative	The Proposed Action would result in **negligible** to **moderate** adverse impacts on finfish, invertebrates, and EFH. Long-term impacts on EFH from construction and installation of the Proposed Action could be moderate (e.g., presence of EMF and structures). Temporary disturbance and displacement, habitat conversion, behavioral changes, and injury of sedentary fauna are expected during the	Construction, O&M, and decommissioning of Alternatives C, D, E, F, G, and H would result in **negligible** to **moderate** adverse impacts as described under the Proposed Action. However, impacts under Alternatives C, D, F, G, and H would be slightly minimized compared to the Proposed Action, without changing the overall conclusions. Alternative C directly proposes to reduce impacts on finfish and invertebrates by reducing impacts on Cholera Bank, an important habitat area to many species and a spawning ground for longfin squid. Alternative E would create a 1-nm setback between

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
	adverse impacts on finfish, invertebrates, and EFH. The overall (all IPFs considered together) impacts on finfish, invertebrates, and EFH would be **moderate**[2]. It is anticipated that the greatest impact on finfish and invertebrates would be caused by ongoing regulated fishing activity and climate change.	construction phase of the Proposed Action and would be **negligible** to **moderate**[1]. In context of other reasonably foreseeable environmental trends, cumulative impacts resulting from individual IPFs from ongoing and planned activities, including the Proposed Action, would range from **minor** to **moderate**[1] adverse. The overall impact of the Proposed Action would be **moderate** adverse.	EW 1 and EW 2, likely increasing vessel traffic through the Project area and its associated impacts on finfish, invertebrates, and EFH including vessel noise, accidental releases of fuels/fluids/hazardous materials and trash and debris, and permitted discharges, and the risk of entanglement in lost fishing gear within the Project area. Fishing activities, including trawling, could occur within the setback area, potentially disturbing bottom habitat (e.g., scour, resuspension of sediments) for benthic finfish, invertebrates, and EFH species. Impacts from expected increases in vessel traffic and fishing activities through the setback area are not expected to be measurably different than those described for the Proposed Action. Alternatives C-1, C-2, and D were included as part of the PDE and maximum-case scenarios evaluated for the Proposed Action and therefore impacts on finfish, invertebrates, and EFH were evaluated under the Proposed Action. Alternative G would avoid impacts on finfish and invertebrates in a small portion of the EW 2 export cable route. Alternative H would utilize dredging methods that would minimize dredging impacts near the SBMT EW 1 landfall site. Implementation of the Preferred Alternative would result in the reduction or avoidance of some impacts on finfish, invertebrates, and EFH; however, the impact determinations made under the Proposed Action would not be changed. Mitigation recommended for inclusion in the Preferred Alternative is analyzed in Section 3.13.11.

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
3.14 Land Use and Coastal Infrastructure	Continuation of existing environmental trends and activities under the No Action Alternative would result in **minor** adverse impacts on land use and coastal infrastructure and **minor beneficial** impacts on regional ports. The No Action Alternative combined with all planned activities (including other offshore wind activities) would result in **minor** adverse impacts and **minor** to **major beneficial**[1] impacts.	The Proposed Action would result in **minor** adverse with **minor beneficial** impacts on land use and coastal infrastructure. If EW 2 Onshore Substation C is selected, **moderate** adverse impacts on existing land use at the site are expected. Beneficial impacts would result from port utilization and proposed bulkhead repairs at SBMT. Adverse impacts would primarily result from land disturbance during onshore installation of the cable route and substation, accidental spills, and construction noise and traffic. The Proposed Action would result in **minor** adverse and **major beneficial** impacts from the combination of the Proposed Action and other ongoing and planned activities (including offshore wind activities).	Because Alternatives B, C, D, E, and F involve modifications only to offshore components, and because Alternative G is already covered under the Proposed Action as part of the PDE approach, impacts on land use and coastal infrastructure from those alternatives would be the same as those of the Proposed Action. Under Alternative H, an alternative method of dredge and fill activity would occur in waters around the SBMT, which would not materially change the analysis of any IPF for land use and coastal infrastructure compared to the Proposed Action. In context of reasonably foreseeable environmental trends, the contribution of Alternative B, C, D, E, F, G, or H to the impacts of individual IPFs from ongoing and planned activities would be the same as that of the Proposed Action. Overall, the Preferred Alternative would result in similar levels of impacts on land use and coastal infrastructure as Alternative A. The Preferred Alternative is expected to result in **minor** adverse impacts related to the IPFs for accidental releases, lighting, land disturbance, and presence of structures unless EW 2 Onshore Substation C is selected, which would result in **moderate** adverse impacts on existing land use at the site and **minor beneficial** impacts related to port utilization.
3.15 Marine Mammals	Not approving the COP would have no additional incremental effect on marine mammals (i.e., no effect). Continuation of existing environmental trends and activities under the No Action Alternative would result in **negligible** to **moderate** impacts on mysticetes (other than NARW), odontocetes, and pinnipeds and **negligible** to **major** impacts on NARW.	BOEM anticipates that the impacts resulting from the Proposed Action, including the baseline, would range from **negligible** to **moderate** adverse impacts on mysticetes (other than NARW), odontocetes, and pinnipeds and **negligible** to **major** adverse impacts[1] on NARW.[4] and could include **minor beneficial** impacts for odontocetes and pinnipeds. Adverse impacts are	Construction, O&M, and decommissioning of Alternatives B, C, D, E, F, and G would have the same overall **negligible** to **moderate** adverse impacts on odontocetes and pinnipeds, **negligible** to **moderate** adverse impacts on mysticetes (other than NARW), **negligible** to **major** adverse impacts on NARW, **minor beneficial** impacts on odontocetes and pinnipeds, and the same **minor** incremental impacts for NARW, odontocetes, and pinnipeds and **minor** to **moderate** incremental impacts for mysticetes (other than NARW) as described under the Proposed Action. Alternative B

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
	The No Action Alternative combined with all planned activities (including other offshore wind activities) would result in **negligible** to **moderate** impacts[1] on mysticetes (other than NARW), odontocetes, and pinnipeds and **negligible** to **major** impacts on NARW.[4] It could include **minor beneficial** impacts for odontocetes and pinnipeds. Impacts are primarily due to underwater noise, vessel activity (vessel collisions), and the presence of structures.	expected to result mainly from underwater noise and the presence of structures. Beneficial impacts are expected to result from the presence of structures. The incremental impact of the Proposed Action when compared to the No Action Alternative would be **minor**[3] for NARW, odontocetes, and pinnipeds and **minor** to **moderate**[2, 3] for mysticetes (other than NARW). In context of other reasonably foreseeable environmental trends in the area, combined impacts from all IPFs associated with all ongoing and planned activities, including the Proposed Action, would result in **negligible** to **moderate** impacts[1] on mysticetes (other than NARW), odontocetes, and pinnipeds, and **negligible** to **major** impacts[1] on NARW[4] and could include minor beneficial impacts for odontocetes and pinnipeds.	would result in fewer impacts on Cholera Bank, an important fishing area, due to the removal of up to six WTG positions from the northwestern end of EW 1. Alternative E, which creates a 1-nm setback between EW 1 and EW 2 by the removal of up to seven WTG positions, would improve access for fishing; however, the resultant increase in vessel traffic through the Project area could increase the occurrence of vessel noise, vessel strikes, accidental releases of fuels/fluids/hazardous materials and trash and debris, permitted discharges, and the risk of fishing gear entanglement and loss within the Project area. Alternative F would result in fewer impacts in the Lease Area due to the removal of nine WTGs for the southeastern portion of EW 1. Alternatives C and D were included as part of the PDE and maximum-case scenarios evaluated for the Proposed Action and therefore do not represent any change from the Proposed Action. Alternative G would involve changes to only the onshore portion of the EW 2 export cable route, and therefore the impact of Alternative G on marine mammals would be the same as that of the Proposed Action. Overall, impacts of the Preferred Alternative would be similar to impacts of the Proposed Action and would result in **negligible** to **moderate** adverse impacts[1] on odontocetes and pinnipeds, **negligible** to **moderate** adverse impacts[1] on mysticetes (other than NARW), **negligible** to **major** adverse impacts[1] on NARW,[4] and **minor beneficial** impacts on odontocetes and pinnipeds. The incremental impact of the Preferred Alternative when compared to the No Action Alternative would be **minor**[3] for NARW, odontocetes, and pinnipeds and **minor** to **moderate**[2, 3] for mysticetes (other than NARW). Mitigation recommended for inclusion in the Preferred Alternative is analyzed in Section 3.15.11.
3.16	Under the No Action Alternative,	The Proposed Action would result in	Construction, O&M, and decommissioning of

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
Navigation and Vessel Traffic	the impact of ongoing activities would result in **moderate** impacts on navigation and vessel traffic. The impacts of planned activities other than offshore wind would be **minor** because while impacts would be measurable, they would not disrupt navigation and vessel traffic. The overall impacts associated with ongoing and planned activities other than offshore wind and future offshore wind activities in the geographic analysis area would result in **moderate** impacts because the overall effect would be notable, but vessels would be able to adjust to account for disruptions.	**minor** to **moderate** impacts on navigation and vessel traffic. Impacts include changes in navigation routes due to the presence of structures and cable emplacement, delays in ports, degraded communication and radar signals, and increased difficulty of offshore SAR or surveillance missions within the Wind Farm Development Area. Some commercial fishing, recreational, and other vessels would choose to avoid the Wind Farm Development Area, leading to potential congestion of vessels along the Wind Farm Development Area borders. The increase in potential for marine accidents, which may result in injury, loss of life, and property damage, could produce disruptions for ocean users in the geographic analysis area. The overall cumulative impacts on navigation and vessel traffic from ongoing and planned activities, including the Proposed Action, would range from **minor** to **moderate**[2].	Alternatives B, C, D, E, F, G, and H would have the same **minor** to **moderate**[2] adverse impacts on navigation and vessel traffic as described under the Proposed Action. Although Alternative B would have reduced impacts due to the reduction in WTG positions at the narrow end of EW 1, the magnitude of impacts would not be materially different from that of the Proposed Action. Alternatives E and F, which remove perimeter positions of the turbine array, would result in an incremental decrease in powered or drift allision risk in those specific areas for commercial vessels passing within the respective TSS lanes. However, the open space created by the setback between EW 1 and EW 2 under Alternative E could potentially lead to space-use conflicts and cause denser rather than dispersed traffic within this area. Alternatives G and H would not affect navigation and vessel traffic. Alternatives C-1 and C-2 would narrow the PDE proposed in Empire's COP to reduce use conflicts for vessels either transiting the Ambrose Navigation Channel (Alternative C-1) or anchoring in the Gravesend Anchorage Area (Alternative C-2). However, because both route options are analyzed within the PDE for the Proposed Action, impacts of Alternative C-1 and C-2 would be similar to those of the Proposed Action. Narrowing the PDE for EW 2 export cable routes near the sand borrow area under Alternative D does not represent any change from the Proposed Action for navigation and vessel traffic. Overall, the impacts of the Preferred Alternative would be similar to impacts of the Proposed Action and would result in **minor** to **moderate**[2] adverse impacts. Mitigation recommended for inclusion in the Preferred Alternative is analyzed in Section 3.16.12.
3.17 Other Uses	Continuation of existing environmental trends and activities under the No Action	The Proposed Action would result in **negligible** impacts for cables and pipelines; **minor** impacts for	Alternatives B, E, and F would alter the turbine array layout but each alternative would allow for installation of up to 147 WTGs as defined in

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
	Alternative would result in **negligible** impacts for marine mineral extraction, military and national security uses, aviation and air traffic, cables and pipelines, and radar systems and **moderate** impacts on scientific research and surveys. The No Action Alternative combined with all planned activities (including other offshore wind activities) would result in **negligible** impacts for aviation and air traffic; **minor** impacts for marine mineral extraction and cables and pipelines; **moderate** impacts for radar systems due to WTG interference; **minor** impacts for military and national security uses except for USCG SAR operations, which would have **moderate** impacts; and **major** impacts for scientific research and surveys.	aviation and air traffic and most military and national security uses; **moderate** impacts for USCG SAR operations, radar systems, and marine mineral extraction; and **major** impacts for NOAA's scientific research and surveys. The installation of WTGs in the Project area would result in increased navigational complexity and increased allision risk for vessel traffic and low-flying aircraft and would result in line-of-sight interference for radar systems. Additionally, the presence of structures would exclude certain areas within the Project area occupied by Project components (e.g., WTG foundations, cable routes) from potential vessel and aerial sampling and affect survey gear performance, efficiency, and availability for NOAA surveys supporting commercial fisheries and protected-species research programs. The Proposed Action combined with all planned activities (including other offshore wind activities) would result in **negligible** impacts for cables and pipelines; **minor** impacts for aviation and air traffic, and most military and national security uses; **moderate** impacts for marine mineral extraction, radar systems and USCG SAR operations; and **major** impacts for NOAA's scientific research and surveys.	Empire's PDE. Alternative C would only approve one cable export route that is currently described within the PDE. Under Alternative D, BOEM would only approve submarine export cable route options for EW 2 that avoid the sand borrow areas offshore Long Island near Jones Inlet. Alternatives G and H would result in modifications to onshore components that are unlikely to have impacts on the resources evaluated under other uses. Although Alternatives B, C, D, E, F, G, and H modify components of the PDE or restrict what aspects of the PDE are approved, the modifications would not materially change the analysis of any IPF for any resource analyzed under other uses when compared to the Proposed Action; therefore, the overall impact level would be the same as under the Proposed Action: **negligible** for cables and pipelines; **minor** for aviation and air traffic and most military and national security uses; **moderate** for marine mineral extraction, radar systems, and USCG SAR operations; and **major** for NOAA's scientific research and surveys. In context of reasonably foreseeable environmental trends, the contribution of Alternatives B, C, D, E, F, G, and H to the impacts of individual IPFs from ongoing and planned activities would be the same as that of the Proposed Action: **negligible** for cables and pipelines; **minor** for aviation and air traffic and most military and national security uses; **moderate** for marine mineral extraction, radar systems, and USCG SAR operations; and **major** for NOAA's scientific research and surveys. Considering all the IPFs together, BOEM anticipates that the cumulative impacts of Alternative B, C, D, E, F, G, or H in combination with the impacts from ongoing and planned activities would result in impacts that are **negligible** for cables and pipelines; **minor** for aviation and air traffic and most military and national security uses; **moderate** for marine

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
			mineral extraction, radar systems, and USCG SAR operations; and **major** for NOAA's scientific research and surveys. Overall, the impacts of the Preferred Alternative are expected to be similar to those of the Proposed Action with **negligible** impacts for cables and pipelines; **minor** impacts for aviation and air traffic; **moderate** impacts for marine minerals extraction; **minor** impacts for most military and national security uses; **moderate** impacts for radar systems and USCG SAR operations; and **major** impacts for scientific research and surveys. Mitigation recommended for inclusion in the Preferred Alternative is analyzed in Section 3.17.11.
3.18 Recreation and Tourism	Continuation of existing environmental trends and activities under the No Action Alternative would result in **minor** impacts on recreation and tourism. The No Action Alternative combined with all planned activities (including other offshore wind activities) would result in **minor** adverse and **minor beneficial** impacts on recreation and tourism.	The Proposed Action would result in **minor** adverse and **minor beneficial** impacts on recreation and tourism. Impacts would result from short-term impacts during construction: noise, traffic, anchored vessels; and the long-term presence of cable hardcover and structures in the Wind Farm Development Area during operations, with resulting impacts on recreational vessel navigation. Beneficial impacts would result from the reef effect and sightseeing attraction of offshore wind energy structures. The Proposed Action would contribute an undetectable to noticeable increment to the **minor** adverse and **minor beneficial** impacts on recreation and tourism from the combination of the Proposed Action and other ongoing and planned activities (including offshore wind activities).	Alternatives B, E, and F would remove specific WTG positions but would not alter the maximum number of WTGs that could be installed within the PDE; the overall impact level would remain the same as that of the Proposed Action: **minor** adverse (related to IPFs for anchoring, land disturbance, lighting, cable emplacement, noise, and traffic) and **minor** adverse to **minor beneficial**[2] (related to the presence of structures). Because Alternative G is already covered under the Proposed Action as part of the PDE approach and narrowing the submarine and the onshore cable route options under Alternative C, D, or G would not change the analysis of any IPF, the impacts on recreation and tourism from these alternatives would be the same as under the Proposed Action: **minor** adverse (related to IPFs for anchoring, land disturbance, lighting, cable emplacement, noise, and traffic) and **minor** adverse to **minor beneficial** (related to the presence of structures). In context of reasonably foreseeable environmental trends, the cumulative impact of Alternatives B, C, D, E, F, G, and H in combination with ongoing and planned activities would be the same as that of the Proposed Action: **minor** adverse (related to IPFs for

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
			anchoring, land disturbance, lighting, cable emplacement, noise, and traffic) and **minor** adverse to **minor beneficial**[2] (related to the presence of structures). Overall, the impacts on recreation and tourism from the Preferred Alternative would be similar to those described under the Proposed Action with **minor** adverse impacts related to IPFs for anchoring, land disturbance, lighting, cable emplacement, noise, and traffic and **minor** adverse to **minor beneficial**[2] impacts related to the presence of structures.
3.19 Sea Turtles	Continuation of existing environmental trends and activities under the No Action Alternative would result in **negligible** to **minor** impacts[1] on sea turtles. The No Action Alternative combined with all planned activities (including other offshore wind activities) would result in **minor** impacts with some **minor beneficial** impacts on sea turtles. The foundations from WTG and OSS may provide foraging opportunities through prey aggregation, which may result in minor beneficial impacts.	The Proposed Action would result in **negligible** to **minor** adverse impacts[1] and could include potentially **minor beneficial** impacts. Beneficial impacts are expected to result from the presence of structures creating an artificial reef effect. Cumulative impacts associated with all ongoing and planned activities, including the Proposed Action, would result in **negligible** to **minor** adverse impacts[1] and **minor beneficial** impacts on sea turtles. The main drivers of adverse impacts are pile-driving noise and associated potential for auditory injury, the presence of structures, and vessel traffic posing a risk of collision.	Construction, O&M, and decommissioning of Alternatives B, C, D, E, F, and G would have the same overall **negligible** to **minor** adverse impacts and **minor beneficial** impacts on sea turtles as described under the Proposed Action. Alternative B would reduce impacts on Cholera Bank, an important habitat area to many species, due to the removal of up to six WTG positions from the northwestern end of EW 1. Alternative E, which creates a 1-nm setback between EW 1 and EW 2 by the removal of up to seven WTG positions, would improve access for fishing; however, the resultant increase in vessel traffic through the Project area could increase the occurrence of vessel noise, vessel strikes, accidental releases of fuels/fluids/hazardous materials and trash and debris, permitted discharges, and the risk of fishing gear entanglement and loss within the Project area. Alternative F would result in fewer impacts in the Lease Area due to the removal of nine WTGs for the southeastern portion of EW 1. Alternatives C-1, C-2, and D were included as part of the PDE and maximum-case scenarios evaluated for the Proposed Action and therefore do not represent any change from the Proposed Action. Alternative G would involve changes to only the onshore portion of the EW 2 export cable route; therefore, the impact of Alternative G on sea turtles would be the

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
			same as that of the Proposed Action. Overall, impacts of the Preferred Alternative would be similar to impacts of the Proposed Action and would result in **negligible** to **minor** adverse impacts[1] and **minor beneficial** impacts on sea turtles. Mitigation recommended for inclusion in the Preferred Alternative is analyzed in Section 3.19.11.
3.20 Scenic and Visual Resources	Continuation of existing environmental trends and activities under the No Action Alternative would result in **minor** to **moderate** impacts on scenic and visual resources. The No Action Alternative combined with all other planned activities (including other offshore wind activities) would result in **major** impacts on visual and scenic resources on the open ocean and **minor** to **major**[2] impacts on seascape and landscape due to addition of new structures, nighttime lighting, onshore construction, and increased vessel traffic.	Impacts of the Proposed Action on scenic and visual resources would range from **negligible** to **major**. The main drivers for this impact rating are the major adverse impacts associated with the presence of structures, lighting, and vessel traffic. The Proposed Action would contribute an incremental impact to the **major** adverse impact on scenic and visual resources from the combination of the Proposed Action and other ongoing and planned activities (including other offshore wind activities).	All action alternatives and the Preferred Alternative would have similar noticeability, contrasts, scale, and prominence effects on seascape character, open ocean character, landscape character, and viewer experience to the effects of the Proposed Action. Mitigation recommended for inclusion in the Preferred Alternative is analyzed in Section 3.20.12.
3.21 Water Quality	Continuation of existing environmental trends and activities under the No Action Alternative would result in **moderate** impacts on water quality. The No Action Alternative combined with all other planned activities (including other offshore wind activities) would result in **moderate** impacts on water quality, primarily driven by the unlikely event of a large-volume,	The Proposed Action would result in **negligible** to **moderate**[1] impacts on water quality primarily due to sediment resuspension and accidental releases. The impacts are likely to be temporary or small in proportion to the geographic analysis area and the resource would recover completely after decommissioning. The moderate rating is primarily driven by the unlikely event of a large-volume, catastrophic release.	Alternatives B, E, and F would have the same number of WTGs as the Proposed Action, which would result in the same impacts on water quality; the overall level would not change: **negligible** to **moderate**[1]. Alternative C, D, or G would not materially change the analysis compared to the Proposed Action because the cable route options that would be constructed under these alternatives are already covered under the Proposed Action as part of the PDE approach. Therefore, the overall impact level on water quality would not change: **negligible** to **moderate**[1]. Under Alternative H, an alternative method of dredge and fill activity would

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
	catastrophic release.	The contribution of the Proposed Action to the impacts from ongoing and planned activities (including offshore wind activities) would result in **moderate** impacts on water quality in the geographic analysis area, primarily driven by the unlikely event of large-volume, catastrophic release. While it is an impact that should be considered, it is unlikely to occur based on BOEM's accidental release modeling.	occur in waters around the SBMT, which would not materially change the analysis of any IPF compared to the Proposed Action because BOEM anticipates the difference in impacts compared to the Proposed Action would not be materially different, as the area that would be affected in the geographic analysis area is small and would not have a meaningful impact overall on water quality in the geographic analysis area. Therefore, the overall impact level on water quality would not change: **negligible** to **moderate**. In context of reasonably foreseeable environmental trends, the overall impacts associated with Alternatives B, C, D, E, F, G, and H when each is combined with the impacts from ongoing and planned activities would be the same as for the Proposed Action: **negligible** to **moderate**[1]. Considering all the IPFs together, BOEM anticipates that the contribution of Alternatives B, C, D, E, F, G, and H to the impacts from ongoing and planned activities would result in **moderate** impacts on water quality in the geographic analysis area. Overall, the Preferred Alternative would be similar to the Proposed Action in terms of impacts on water quality. Accordingly, impacts of the Preferred Alternative alone would remain the same as those of the Proposed Action: **negligible** to **moderate**[1].
3.22 Wetlands	Continuation of existing environmental trends and activities under the No Action Alternative would result in **minor** impacts on wetlands. The No Action Alternative combined with all planned activities (including other offshore wind activities) would result in **minor** impacts, primarily through land disturbance.	The Proposed Action may affect wetlands through short-term or permanent disturbance from activities within or adjacent to these resources. Considering the avoidance, minimization, and mitigation measures required under federal and state statutes (e.g., CWA Section 404), construction of the Proposed Action would likely have **negligible** to **minor**[1] impacts on wetlands.	The **negligible** to **minor**[1] impacts on wetlands under the Proposed Action would be the same under Alternatives B, E, and F because these alternatives would differ only with respect to offshore components, and offshore components of the proposed Projects have no potential impacts on wetlands and are outside of the wetlands geographic analysis area. Alternative C or D would not change the analysis compared to the Proposed Action because the cable route options that would be constructed under these alternatives are already covered under the Proposed Action as part of the

Resource	No Action Alternative	Alternative A Proposed Action	Differences Among Action Alternatives
		The Proposed Action would not contribute a noticeable increment to the **minor** impact on wetlands from the combination of the Proposed Action and other ongoing and planned activities (including other offshore wind activities).	PDE approach and the specific cable route options that would be constructed under Alternative C or D have no potential impacts on wetlands. Therefore, the impact level on wetlands would not change: **negligible** to **minor**[1]. Alternative G would not change the analysis compared to the Proposed Action because while impacts on wetlands would be minimized, permanent wetland impacts are still not anticipated and short-term wetland impacts are still likely to occur at inland crossings. Therefore, the impact level on wetlands would not change: **negligible** to **minor**. Under Alternative H, an alternative method of dredge and fill activity would occur around the SBMT, which would not materially change the analysis of any IPF compared to the Proposed Action because there are no wetlands identified at the SBMT, and any potential indirect effects on wetlands in the vicinity would be temporary. Therefore, the overall impact level on wetlands would not change: **negligible** to **minor**[1]. Overall, the Preferred Alternative would be similar to the Proposed Action in terms of impacts on wetlands. Accordingly, impacts of the Preferred Alternative alone would remain the same as those of the Proposed Action: **negligible** to **minor**. Mitigation recommended for the Connected Action at SBMT is analyzed in Section 3.22.13.

AAQS = ambient air quality standards; EFH = essential fish habitat; GHG = greenhouse gas; HAP = hazardous air pollutant; IPF = impact-producing factor; NAAQS = National Ambient Air Quality Standards; NOAA = National Oceanic and Atmospheric Administration; NRHP = National Register of Historic Places; SAR = search and rescue; VOC = volatile organic compound

1 The impact level range is the range of impacts resulting from individual IPFs that have different impact levels.
2 The impact level range represents a range in overall impact level.
3 The impact level for the action alternative(s) excludes the No Action baseline and represent the incremental impact of the action alternative.
4 Impacts including the environmental baseline were assessed as negligible to major for the No Action Alternative and action alternatives for NARW because ongoing activities such as entanglement and vessel strikes continue to compromise the viability of the species due to their low population numbers and downward population trends.

3.3. Environmentally Preferable Alternatives

BOEM is required by CEQ regulations to identify in the ROD the *environmentally preferable alternative(s)* (40 C.F.R. § 1505.2). Upon consideration and weighing of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources, 43 C.F.R. § 46.30, the DOI's responsible official, who is approving this ROD, has determined that the environmentally preferable alternatives are the No Action Alternative and a combination of the following alternatives: Alternative B (Remove Up to Six WTG Positions from the Northwest End of EW 1), Alternative C-1 (Gravesend Anchorage Area), Alternative D (EW 2 Submarine Export Cable Route Options to Minimize Impacts to the Sand Borrow Area), Alternative G (Cable Bridge Crossing of Barnums Channel Adjacent to Long Island Railroad Bridge) and Alternative H (Dredging for Empire Wind 1 [EW 1] Export Cable Landfall).

Adverse environmental impacts in the Project area would generally be less under the No Action Alternative because construction, O&M, and decommissioning activities and disturbances related to the proposed Project would not occur and, hence, impacts on physical, biological, or cultural resources from the Proposed Action would be avoided. Nonetheless, the No Action Alternative would likely result in moderate, long-term, adverse impacts on regional air quality because other energy generation facilities would be needed to meet future power demands. These facilities might be fueled with natural gas, oil, or coal, which would emit more pollutants than wind turbines and would have more adverse impacts on air quality and contribute greenhouse gases that cause climatic change. Adverse impacts on air quality also tend to disproportionally impact environmental justice communities, which often include low-income and minority populations. These air quality impacts might be compounded by other impacts because selection of the No Action Alternative could negatively impact future investment in U.S. offshore wind energy facilities, which in turn could result in the loss of beneficial cumulative impacts, such as increased employment, improvements in air quality, and reductions in greenhouse gas emissions. As noted in Final EIS, Appendix G, Section 3.11, public and private investors have committed substantial amounts of new funding to offshore wind development, including commitments to develop manufacturing facilities, and advancement of the Project is critical to continue to attract investment in the U.S. offshore wind market.

Alternative B would exclude up to six WTGs (and the interarray cable connecting those WTGs) from the northwest end of EW 1 to reduce potential impacts at the edge of Cholera Bank and on scenic resources and navigation safety. Cholera Bank is an area of variable depth that contains patches of rocky bottom habitat, in a broader region of primarily soft-bottom habitat and is a popular location for recreational fishing. Hard substrate is an important benthic feature due to its provision of attachment points for sessile invertebrates and shelter or habitat for various structure-associated fishes. Sessile invertebrates that attach to hard substrate, such as deep-sea corals, sponges, and other sensitive species, are often slow-growing species and thus their recovery from anchoring or other disturbance will take longer as compared to invertebrates found in soft sediments. At local scales, structurally complex hard-bottom substrates are often associated with higher levels of biodiversity than surrounding less-complex sediments and contribute to increased habitat heterogeneity and biodiversity on larger scales. Alternative B would reduce temporary and permanent impacts to benthic habitat at the edge of Cholera Bank and would increase the setback of the closest WTG from coastal viewpoints, although differences in the vertical and horizontal extent of the field of view would not be greatly noticeable to the casual viewer. Alternative B would also increase the setback between the narrow end of vessel traffic lanes and the WTG array and reduce powered or drift allision risks for large (deep-draft) commercial vessels compared to Alternatives A and F.

Alternatives C-1, D, G, and H would narrow the Project Design Envelope (PDE) proposed in Empire's COP to select export cable route options or construction methods that reduce environmental impacts or use conflicts compared to the Proposed Action (which includes analysis of the full range of PDE parameters).

Under Alternative C-1, Empire Wind would bury the submarine export cable to a depth of 15 feet below the charted water depth of USCG Anchorage #25 which would reduce the potential for interactions between the submarine export cable and vessels anchored in Gravesend Bay. The cable would avoid the federally authorized Ambrose Navigation Channel and would avoid disruption to vessels transiting within the navigation channel during construction and when maintenance activities are required for O&M. Alternative C-1 also avoids potential risks to the cable in the event of accidental anchor drag or emergency anchoring by vessels if cable depth is not maintained. The FEIS found that Alternatives C-1 and C-2 were similar for the other environmental and socioeconomic resources analyzed.

Alternative D would narrow Empire's PDE to only allow selection of an export cable route for EW 2 that avoids the sand borrow area by at least 500 meters as the export cables approach the EW 2 cable landfalls. Avoidance of the sand borrow area would reduce impacts on marine mineral extraction. Because these borrow areas are closest to shore and therefore have the least cost to USACE and cost-sharing partners, they are frequently used for coastal resiliency and beach nourishment projects. By avoiding crossing sand borrow areas, USACE is better able to undertake resilience projects in a cost-effective manner and meet the demand for clean sand for these projects.

Under Alternative G, the Barnums Channel export cable crossing would consist of an elevated cable bridge across Barnums Channel adjacent to the Long Island Rail Road railway bridge. Crossing Barnums Channel with a cable bridge adjacent to the Long Island Rail Road railway bridge would minimize impacts to tidal wetlands and within the tidal channel itself compared to other EW 2 route options for the Barnums Channel crossing or alternate construction methods (see Final EIS Appendix O, *Alternatives Analysis for Corps Permit Application*). The cable bridge crossing would require installation of support footings within the channel; however, this would occur along a corridor already containing both the railroad bridge and another utility bridge on the eastern side of the railroad crossing. Because the northern and southern sides of the crossing comprise an existing parking lot and a tank farm, respectively, impacts on wetlands and natural habitats on either side of the crossing would be avoided.

Construction of the EW 1 export cable landfall would use a clamshell dredge with environmental bucket, and sediments would be placed directly into scows and settled for a minimum of 24 hours. Following the settling period, the scows would be decanted in accordance with applicable permits and regulatory requirements. Dredged material would be removed for either beneficial reuse, if suitable, or proper disposal at a licensed facility. Alternative H would reduce the discharge of dredged material during construction of the EW 1 submarine export cable landfall compared to other dredging options considered in the Empire Wind PDE (i.e., open cut trenching/jetting, suction hopper dredging, hydraulic dredging).

The environmentally preferred alternative (consisting of Alternatives B, C-1, D, G, and H) would positively impact the development of offshore wind energy facilities, increasing the scale of the beneficial impacts of renewable offshore wind energy generation and potentially reducing the long-term impact on resources impacted by climate change. Offshore wind energy production has been

identified as a key factor for Atlantic states to reach their greenhouse gas emission goals. It is a presently irreplaceable component in state, Federal, and international strategies to reduce and reverse global climate change over the coming decades.

4. Mitigation, Monitoring, and Reporting

Appendix H of the Final EIS identifies measures to avoid, minimize, and mitigate adverse environmental impacts that could result from the proposed activities as well as the anticipated enforcing agency.[10] BOEM is adopting all the measures identified in Table H-1 of Appendix H of the Final EIS, except for those that are identified in those tables as outside of BOEM's authority to enforce and except for two measures in Table H-1, one related to sound field verification of foundation installation and another related to foundation installation received sound level limit. The sound field verification of foundation installation measure would be partially adopted as it is described in the Biological Opinion. Adoption of the measure to establish a received sound level limit would be infeasible because this requirement would effectively require sound field verification at all or nearly all foundations installed, as site conditions such as water depths and seabed composition are expected to vary between foundation locations. This would be costly and logistically challenging, and with no significant demonstrated benefit.

BOEM fully or partially adopted 34 of the 37 Essential Fish Habitat Conservation Recommendations (CR) which are identified in Table H-3 of Appendix H of the Final EIS. CRs # 23 – 32 are within USACE jurisdiction. BOEM has decided not to adopt CR #1 because only a limited number of turbine locations are feasible for pile driving due to geotechnical constraints (glauconite soils). BOEM will not require the Lessee to microsite WTGs or OSSs as discussed in CRs #2, 3, and 15 due to technical and economic infeasibility, so BOEM will not require the Lessee to develop a WTG or OSS micrositing plan. BOEM is not adopting CR# 19 requiring a longfin squid time of year restriction. However, BOEM intends to require a restriction on all pile driving between January 1 and April 30. This measure, while primarily focused on the highly endangered North Atlantic right whale, will also confer benefits to spawning longfin squid in the Project area for the month of April. The implementation of a time-of-year restriction for pile driving and sediment-generating activities in the lease area or federal portions of export cable corridors in waters 50 m in depth or less would significantly impact the overall construction schedule. BOEM is partially adopting CR#21. However, regarding the last sentence of the CR, NMFS did not provide criteria to identify a level of impact and to assess if the mitigations are sufficient. BOEM intends to require the Lessee to follow the sound field verification criteria as presented in the Empire Wind Proposed Rule for Incidental Take Authorization and the Empire Wind Biological Opinion.

The mitigation, monitoring, and reporting measures that BOEM intends to include as conditions of approval are identified in this ROD in Appendix A. Consultation under Section 106 of the National Historic Preservation Act was concluded after publication of the Final EIS, and stipulations included in the executed Memorandum of Agreement for Section 106 are included in Appendix A. Appendix A also clarifies the language of certain measures that were identified in the Final EIS to ensure that they are enforceable, or to reflect updates to measures being considered by NMFS for the final ITR and associated LOA.

[10] Appendix H separately identifies measures proposed by the Lessee as a part of its COP. The Lessee is required, as a condition of BOEM's approval, to conduct activities as proposed in its approved COP, which includes all the applicant-proposed mitigation measures identified in Appendix H.

5. Final Agency Decisions

5.1. The Department of the Interior Decision

After carefully considering the Final EIS alternatives, including comments on the Draft EIS, DOI has decided to approve, with modifications, the COP for Empire Wind adopting the Preferred Alternative (Combination of Alternative C-1, Alternative D, Alternative F, Alternative G, and Alternative H). By selecting the Preferred Alternative (hereinafter the "selected alternative"), DOI will allow for the construction, operation, maintenance, and eventual decommissioning of an approximately 816-megawatt (MW) EW 1 Project and 1,260-MW EW 2 Project on the OCS offshore New York within Lease Area OCS-A 0512, with export cables making landfall at South Brooklyn Marine Terminal in Kings County, New York for EW 1 and on Long Beach in Nassau County, New York for EW 2. The selected alternative would route the EW 1 export cable through an anchorage area at Gravesend Bay rather than through the Ambrose Navigation Channel; provide for a minimum 500-meter buffer between the EW 2 submarine export cable and a sand borrow area offshore Long Beach; optimize the EW 1 and EW 2 WTG layouts to maximize annual energy production and minimize wake loss while addressing geotechnical considerations; utilize an above-water cable bridge to construct the EW 2 onshore export cable crossing at Barnums Channel; and use a method of dredge or fill activities for construction of the EW 1 export cable landfall that would reduce the discharge of dredged material.[11]

Since publication of the Draft EIS, Empire Wind and BOEM have further assessed the presence of glauconite soils in the Lease Area and the potential constraints that glauconite soils present for installation of WTG foundations due to resistance to pile driving. Geotechnical site investigations and laboratory studies have shown that the geotechnical properties of glauconite make it an extremely difficult material to build upon, specifically for the installation of fixed-bottom foundations that support offshore wind turbine towers. Glauconite is crushable due to its low particle strength and turns into a clay-like substance under stress. Therefore, the pressure from driving a monopile into the seabed crushes the glauconite sands, which form a clay-like barrier that is not penetrable. As a result, typical hammering methods will not allow the pile to be installed to the needed penetration depth. Due to the minerals' brittle nature, pile driving in locations that contain concentrations of glauconite is difficult. The crushability of glauconite may result in very high driving resistance for monopile installation or early pile driving refusal as well as the reduction of pile capacity with depth, which all pose a significant risk to project development (BOEM 2023).

Between Draft EIS and Final EIS, Empire Wind performed additional site investigations and studies to quantify the extent of glauconite deposits across the Lease Area as well as their potential impact on pile drivability. The pile drivability analyses determined that 22 of the 71 positions analyzed in EW 1 pose a high risk of pile refusal, leaving 49 suitable positions for WTG installation. Seven positions in the setback zone between EW 1 and EW 2 were also analyzed, and five of these were determined as suitable for foundation installation. Based on

[11] BOEM's authority to approve the installation of facilities is limited to the OCS. Therefore, the installation of the export cable and any other facility components outside the OCS will be authorized by the relevant Federal, state, and local entities.

these findings, Empire Wind proposed to add these additional locations to the EW 1 layout to support installation of the required 54 WTGs for EW 1. In addition, Empire Wind found that of the 96 positions analyzed in EW 2, 80 positions are drivable, and two positions are likely drivable with a reduced margin. Two further positions were shown to have premature refusal but are expected to be defined drivable with further engineering optimization.

The 49 suitable positions identified in EW 1, the five suitable positions identified in the setback zone between EW 1 and EW 2, and the 84 identified positions in EW 2 form the basis of Empire's proposed layout of 138 WTGs as reflected in EIS Alternative F. Empire's Certified Verification Agent appointed for Empire Wind (DNV) independently reviewed the pile drivability analysis and concurred with the approach to the analysis and findings. BOEM and the National Renewable Energy Laboratory also independently reviewed Empire's analysis related to the presence of glauconite and pile drivability in the Lease Area and based on the number of WTG positions determined to have higher risk of pile refusal (22 WTG positions in EW 1 and 16 WTG positions in EW 2), determined that EIS Alternatives B and E would no longer meet the purpose and need because selection of Alternative B (removing up to 6 WTG positions from EW 1) or Alternative E (removing 7 WTG positions to create a setback between EW 1 and EW 2) would not allow Empire Wind to develop a project with the estimated capacity necessary to meet current commitments to NYSERDA and to economically develop a project that could realistically compete in a future NYSERDA solicitation. Therefore, BOEM has not selected Alternative B or Alternative E in this ROD.

EIS Alternatives C-1, D, G, and H narrow the PDE proposed in Empire's COP to select export cable route options or construction methods that reduce environmental impacts or use conflicts compared to the Proposed Action (which includes analysis of the full range of PDE parameters). Alternatives C-1, D, G, and H are identified as part of the environmentally preferable alternative and the rationale for their inclusion is described in Section 3.3 above. Alternatives C-1, D, G, and H are consistent with Empire's applications to the New York District, Corps of Engineers for a Department of Army permit pursuant to Section 10 of the River and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C. 1344) (NAN-2022-00901-EMI and NAN-2022-00902-EMI) and with Empire's Article VII applications to the New York State Public Service Commission (Case 21-T-0366 and Case 22-T-0346) and support joint decision-making with USACE and New York State.

Under Alternative C-2, Empire's submarine export cable would traverse the Ambrose Navigation Channel west of Gravesend Bay and would result in temporary disruption to vessels transiting within the navigation channel during construction and when maintenance activities are required for O&M. Installing the cable in the navigation channel would also introduce a potential risk to the cable in the event of accidental anchor drag or emergency anchoring by vessels if cable depth is not maintained.

Under the No Action Alternative, DOI would not approve the Empire Wind Projects. In addition, no other permits or authorizations for this proposed Projects would be issued. Adverse environmental impacts across resources would generally be less under the No Action Alternative as no construction, operation, or decommissioning activities would occur on the OCS. As a

result, impacts on physical, biological, social, or cultural resources from the selected alternative would be avoided. However, the No Action Alternative would still be expected to result in moderate, long-term, adverse impacts on regional air quality because other energy generation facilities would be needed to meet future power demands. These facilities might be fueled with natural gas, oil, or coal, which would emit more pollutants than wind turbines and would have more adverse impacts on air quality and contribute greenhouse gases that cause climate change. The No Action Alternative was not selected in this ROD because it would not allow for the development of DOI-managed resources and would not meet the purpose and need.

In summary, DOI considered which of the action alternatives would result in fewer environmental impacts and use conflicts, while meeting the purpose and need for the action. The Final EIS found that a combination of Alternative C-1, Alternative D, Alternative F, Alternative G, and Alternative H would result in fewer impacts than other action alternatives considered, while still meeting the purpose and need. No other combination of alternatives would meet the purpose and need for the action. Accordingly, DOI has selected this alternative in this ROD.

DOI weighed all concerns in making decisions regarding these Projects and has determined that all practicable means within its authority have been adopted to avoid or minimize environmental and socioeconomic harm associated with the selected alternative and the approval of the COP. Appendix A of this ROD identifies the mitigation, monitoring, and reporting requirements that will be adopted as terms and conditions of COP approval. The mitigation and monitoring measures identified in Appendix A are representative of those included in Appendix H of the Final EIS. BOEM conducted a thorough National Historic Preservation Act Section 106 review of the Project with federally recognized Tribes, the New York State Historic Preservation Office, the New Jersey State Historic Preservation Office, the Advisory Council on Historic Preservation, and consulting parties concurrent with the NEPA process and, through the Section 106 review, identified historic properties and assessed potential effects to historic properties, and identified measures to resolve adverse effects. Draft measures to resolve adverse effects were described and analyzed in the Draft EIS. After the Final EIS was made available to the public, BOEM addressed consulting party comments on the Memorandum of Agreement (MOA) and distributed the MOA for signature by the consulting parties. The Section 106 review concludes with the execution and implementation of the MOA, which was signed by the BOEM, the New York State Historic Preservation Office, the New Jersey State Historic Preservation Officer, the Advisory Council on Historic Preservation, the Lessee, and the New Jersey Historic Trust (the mitigation fund administrator) on November 20, 2023. The MOA memorializes measures that will resolve the selected alternative's adverse effects to historic properties including avoidance, minimization, and mitigation measures.

Moreover, BOEM consulted with federally recognized tribes regarding renewable energy leasing and development on the OCS. The following federally recognized tribes were invited to consult: Eastern Shawnee Tribe of Oklahoma; Shawnee Tribe; Absentee-Shawnee Tribe of Indians of Oklahoma; Stockbridge-Munsee Community, Wisconsin/Band of Mohican Indians; The Delaware Nation; Delaware Tribe of Indians; The Shinnecock Indian Nation; The Narragansett Indian Tribe; Wampanoag Tribe of Gay Head (Aquinnah); Mashpee Wampanoag Tribe, Mashantucket Pequot

Tribal Nation; and Mohegan Tribe of Connecticut. Of the federally recognized tribes only the Stockbridge-Munsee Community, Wisconsin/Band of Mohican Indians; The Delaware Nation; Delaware Tribe of Indians; The Shinnecock Indian Nation; Wampanoag Tribe of Gay Head (Aquinnah); Mashantucket Pequot Tribal Nation; and Mashpee Wampanoag Tribe participated in government-to-government consultation meetings. BOEM held four government-to-government meetings with federally recognized Tribes in July 2021, and on August 3, 2021, April 28, 2023, and September 7, 2023.

As set forth in the Final EIS, all alternatives, including the selected alternative, are anticipated to have major adverse impacts to the following resource areas:

Commercial Fisheries and For-Hire Recreational Fishing: Major adverse impacts are anticipated to occur due to the presence of structures (e.g., through gear loss, navigational hazards, space use conflicts, potential impacts on fisheries surveys, new cable emplacement and pile-driving noise) (see Final EIS section 3.9). Such adverse impacts will be mitigated through a requirement for Dominion Energy to establish and implement a direct compensation program to provide monetary compensation to commercial and for-hire recreational fishermen impacted by the Projects and through a requirement for Empire Wind to maintain a fisheries gear loss claims procedure throughout the life of the Projects. BOEM is including terms and conditions 6.1 and 6.3 (see ROD Appendix A) to address this issue.

Cultural Resources: Mitigation was developed with consulting parties through the Section 106 consultation process to resolve adverse effects on historic properties pursuant to 36 C.F.R. 800.6 and are executed in the MOA. Mitigation is also described in section 3.10.13 of the Final EIS. Mitigation that would reduce major impacts on onshore and offshore cultural resources are Empire Wind's compliance with stipulations outlined in the MOA, such as compliance with horizontal protective buffers for all identified marine archaeological resources and six ASLFs, implementation of actions that are consistent with the Post Review Discovery Plan for marine archaeology (enforcement of this measure would be under the jurisdiction of the New York SHPO if in state waters, and BOEM/BSEE if on the OCS), implementation and compliance with temporary fencing to avoid historic properties in the terrestrial area of potential effect, and implementation of and compliance with archaeology monitoring to avoid resources.

Marine Mammals, North Atlantic Right Whale (NARW): Under all alternatives, including the No Action alternative, when considering ongoing and planned activities, major adverse impacts to NARWs could occur due to the risk of vessel strikes and fishing gear entanglement posed by those activities. The incremental impacts of the Project alone are not expected to include entanglements or vessel strikes. Mitigation measures such as vessels maintaining a safe distance from marine mammals and reduced vessel speeds are designed to avoid interactions with marine mammals. The incremental impacts of all action alternatives to NARWs would be minor due to implementation of several mitigation measures, e.g., clearance and shutdown zones, use of sound attenuation measures, numerous vessel strike avoidance measures, and use of Protected Species Observers (PSO) and Passive Acoustic Monitoring (PAM).

Other Uses, Scientific Research and Surveys: NMFS Northeast Fisheries Science Center scientific surveys (hereinafter "NMFS surveys"). NMFS and BOEM have developed the NOAA Fisheries and BOEM Federal Survey Mitigation Implementation Strategy - Northeast US Region (Hare et al. 2022) to address the adverse impacts. BOEM and NMFS are of the view that the solution is a collaborative effort between both agencies and the offshore wind industry to establish project specific monitoring programs that follow specific guidelines, thereby allowing the information to be combined regionally into a programmatic approach (see Final EIS section 3.17). There are 14 NMFS scientific surveys that overlap with wind energy development in the northeast region. Seven of these surveys overlap with the Project. BOEM is including term and condition 6.3 (see ROD Appendix A) to address this issue. Consistent with NMFS and BOEM Survey Mitigation strategy actions 1.3.1, 1.3.2, 2.1.1, and 2.1.2 in the NOAA Fisheries and BOEM Federal Survey Mitigation Implementation Strategy - Northeast US Region, the Lessee must submit to BOEM a survey mitigation agreement between NMFS and the Lessee. The survey mitigation agreement must describe how the Lessee will mitigate the Project's impacts on the seven NMFS surveys. The Lessee must conduct activities in accordance with such agreement. If the Lessee and NMFS fail to reach a survey mitigation agreement, then the Lessee must submit a survey mitigation plan to BOEM and NMFS.

Scenic and Visual Resources: Populations affected by the offshore and onshore actions include tourists visiting and residents living in coastal communities, including low income and minority neighborhoods; recreational users of the seascape, including those using ocean beaches and tidal areas; recreational users of the open ocean, including those involved in yachting, fishing, boating, and passage on ships; recreational users of the landscape, including those using landward beaches, golf courses, cycle routes, and footpaths; tourists, workers, visitors, or local people using transport routes; people working in the countryside, commerce, or dwellings; and people working in the marine environment, such as those on fishing vessels and crews of ships (see Final EIS section 3.20). In coordination with BOEM, the lessee must prepare and implement a scenic and visual resource monitoring plan (see Appendix A 7.2) that monitors and compares the visual effects of the wind farm during construction and O&M (daytime and nighttime) to the findings in the COP Visual Impact Assessment and verifies the accuracy of the visual simulations (photo and video). The monitoring plan shall include monitoring and documenting the meteorological influences on actual WTG visibility over a duration of time from selected onshore key observation points, as determined by BOEM and the Lessee. In addition, the Lessee must include monitoring the operation of ADLS in the monitoring plan. The Lessee shall monitor the frequency that the ADLS is operative, documenting when (dates and time) the aviation warning lights are in the on position and the duration of each event. Details for monitoring and reporting procedures must be included in the plan.

Additional engineering and technical terms and conditions that will be required with COP approval are included in Appendix A of this ROD.[12] BOEM's conditions of approval generally require Empire to comply with all applicable requirements in commercial lease OCS-A 0512 (Lease), statutes, regulations, consultations, and permits and authorizations issued by federal,

[12] All mitigation measures and terms and conditions adopted by BOEM as part of this ROD will be included in the COP authorization letter to be issued to Empire Wind LLC.

state, and local agencies. BOEM is aware that Empire has not yet secured certain necessary rights and authorizations necessary to construct portions of EW2 within New York state. Accordingly, BOEM is imposing condition of approval 1.1.2 stating that Empire Offshore Wind LLC shall not install on the OCS any facilities (as defined in 30 C.F.R. § 585.113) that are solely part of EW2, nor conduct any activities for EW2 that would lead to discharges into navigable waters not already covered by a state Water Quality Certification prior to: (1) issuance of all necessary state and local approvals and conveyance of rights necessary for construction of the in-state portions of the EW2 export cable; (2) receipt of a Water Quality Certification pursuant to § 401 of the Clean Water Act and any needed concurrence from a state agency under the Coastal Zone Management Act for EW2. Further, Empire Offshore Wind LLC will be required to certify annually that it is in compliance with the terms and conditions of its approved COP (30 C.F.R. § 285.633(b)). Empire Offshore Wind LLC must also comply with all other applicable requirements of 30 C.F.R. Parts 285 and 585, including, but not limited to, the submission of a Facility Design Report and a Fabrication and Installation Report, before beginning construction activities.

Today's decision balances the orderly development of OCS renewable energy with the prevention of interference with other uses of the OCS and the protection of the human, marine, and coastal environments. A decision that balances these goals where they conflict and does not hold one as controlling over all others is consistent with the duties required under subsection 8(p)(4) of OCSLA, which requires the Secretary to ensure that approved activity is carried out in a manner that provides for Congress's enumerated goals.

My approval of this decision constitutes the final decision of DOI. The action taken herein is pursuant to an existing delegation of authority.

STEVEN FELDGUS Digitally signed by STEVEN FELDGUS
Date: 2023.11.21 02:21:52 -05'00'

Steven H. Feldgus
Deputy Assistant Secretary
Land and Minerals Management

Date

5.2. National Marine Fisheries Service Decision

This section documents NMFS' evaluation of the proposed action to issue Incidental Take Regulations (ITR) and an Incidental Take Authorization in the form of a Letter of Authorization (LOA) to Empire Offshore Wind LLC (Empire) pursuant to its authorities under the MMPA. It also references NMFS' decision to adopt the BOEM Final EIS to support NMFS' potential decision to issue the ITR and associated LOA. NMFS prepared and signed a separate memorandum independently evaluating the sufficiency and adequacy of the BOEM Final EIS. That memorandum provides NMFS' rationale to adopt the Final EIS to satisfy its independent NEPA obligations related to the ITR and LOA. In that memorandum NMFS concluded: (i) the action analyzed in the Final EIS covers NMFS's proposed decision to issue an LOA to Empire, and meets all NEPA requirements under 40 C.F.R. § 1506.3 (adopting an EIS); (ii) the analysis includes the appropriate scope and level of environmental impact evaluation for NMFS' proposed action and alternatives; and (iii) NMFS' comments and suggestions related to primary environmental effects of concern from the proposed action (i.e., effects to marine mammals), submitted in its role as a cooperating agency, have been satisfied.

On December 7, 2021, NMFS received an application from Empire pursuant to MMPA Section 101(a)(5)(A) for an authorization to take small numbers of marine mammals, by harassment, incidental to the construction of an offshore wind energy project on the Outer Continental Shelf off of New York in OCS-A 0512, for a period of five years. NMFS reviews applications and, if appropriate, issues incidental take authorizations pursuant to the MMPA. Incidental take authorizations may be issued as either: (1) regulations and associated LOAs under Section 101(a)(5)(A) of the MMPA or (2) Incidental Harassment Authorizations under Section 101(a)(5)(D) of the MMPA. In addition, 40 C.F.R. §§ 1500-1508 and NOAA policy and procedures require all proposals for major federal actions to be reviewed with respect to their effects on the human environment. Issuance of an incidental take authorization to Empire is a major federal action, triggering NMFS' independent NEPA compliance obligation. When serving as a cooperating agency, NMFS may satisfy its independent NEPA obligations by either preparing a separate NEPA analysis for its issuance of an incidental take authorization or, if appropriate, by adopting the NEPA analysis prepared by the lead agency. Once NMFS determines the application is adequate and complete, it has a corresponding duty to determine whether and how to authorize take of marine mammals incidental to the activities described in the application in accordance with standards and determinations set forth in the MMPA and its implementing regulations. Thus, the purpose of NMFS' proposed action—which is a direct outcome of Empire's request for authorization to take marine mammals incidental to specified activities associated with the Projects (e.g., pile driving, marine site assessment surveys)—is to evaluate Empire's request under requirements of the MMPA (16 U.S.C. § 1371(a)(5)(A)) and its implementing regulations (50 C.F.R. Part 216) administered by NMFS and to determine whether the findings necessary to support the issuance of the authorization can be made, based on the best available information. NMFS needs to render a decision regarding the request for authorization due to NMFS' responsibilities under the MMPA (16 U.S.C. § 1371(a)(5)(A)) and its implementing regulations. In addition to its opportunity to comment on the DEIS, the public was also involved in the MMPA decision-making process through its opportunity to comment on NMFS' proposed rulemaking which was published in the *Federal Register*, 88 Fed. Reg. 22696

(April 13, 2023). NMFS' final action will take into account those comments, as well as the corresponding formal consultation process under Section 7 of the ESA for issuance of the final ITR and LOA.

5.2.1. NMFS Decision (40 C.F.R. § 1505.2(a)(1))

Pending completion of all statutory processes, NMFS may issue the final ITR and an LOA to Empire authorizing take of marine mammals incidental to construction activities associated with the proposed Project for five years. If so, NMFS' final decision to issue the requested ITR and LOA will be documented in separate Decision Memoranda prepared in accordance with internal NMFS' policy and procedures. The LOA would authorize the incidental take of marine mammals while prescribing the amount and means of incidental take, as well as mitigation, monitoring, and reporting requirements, including those mandated by the Biological Opinion that completes the formal Section 7 consultation process under the ESA. A Notice of Issuance of the LOA would be published in the *Federal Register* within 30 days of issuance of the LOA. The *Federal Register* notice will describe how NMFS concluded the requirements set forth in the MMPA and its implementing regulations were met and issuance of the final ITR and LOA was warranted.

5.2.2. Alternatives NMFS Considered (40 C.F.R. § 1505.2(a)(2))

NMFS is required to consider a reasonable range of alternatives to a proposed action in accordance with NEPA and 40 C.F.R. § 1502.10(a)(5) and § 1502.14. NMFS considered two alternatives, the No Action Alternative in which NMFS would deny Empire's request for an authorization and an action alternative in which it would issue an LOA to Empire with mitigation, monitoring, and reporting requirements.

Consistent with BOEM's No Action Alternative, NMFS would not issue the requested authorization to Empire, in which case, NMFS assumes Empire would not proceed with their proposed project as described in the application since it would be likely to cause harassment of marine mammals in contravention of the MMPA (unless modification to the project was undertaken that would negate the need for the authorization). Since NMFS is also required by 40 C.F.R. § 1505.2(a)(2) to identify an environmentally preferable alternative, NMFS considers the No Action Alternative to be the environmentally preferable alternative as the incidental take of marine mammals would be avoided since no construction activities resulting in harassment would occur.

The other alternative NMFS considered was its Proposed Action, the issuance of the LOA to Empire, which would authorize take of marine mammals incidental to five years of construction activities as noted above, subject to specified mitigation, monitoring, and reporting measures. As part of that alternative, and through the public and agency review process, NMFS will consider a range of mitigation measures to carry out its duty to identify other means of effecting the least practicable adverse impact on the species or stocks. These measures were initially identified in the proposed rule, 88 Fed. Reg. 22696 (April 13, 2023), and may be modified in the final LOA in response to public comment, agency review, and ESA Section 7 consultation. The Proposed Action alternative evaluated by NMFS is consistent with the Preferred Alternative evaluated by

BOEM in the Final EIS and selected in this ROD as it will provide the incidental take authorization necessary to achieve the activities identified in that alternative.

5.2.3. Primary Factors NMFS Considers Favoring Selection of the Proposed Action (40 C.F.R. § 1505.2(a)(2))

As noted earlier, NMFS may issue an LOA to Empire in response to its request for incidental take regulations and an LOA, after completing all required statutory and regulatory processes. NMFS' Proposed Action to promulgate regulations and issue an LOA for BOEM's Preferred Alternative effectively meets NMFS' stated purpose and need for acting. NMFS has an obligation to promulgate regulations and issue a requested LOA if certain statutory and regulatory determinations are made under the MMPA after providing for proper public review and comment.

5.2.4 Mitigation, Monitoring and Reporting Considered by NMFS (40 C.F.R. § 1505.2(a)(3))

NMFS has a statutory and regulatory process to prescribe the permissible methods of take and other means of effecting the least practicable adverse impact on the species or stocks of marine mammals and their habitat, paying particular attention to rookeries, mating grounds, and other areas of similar significance. All incidental take authorizations must also include requirements pertaining to monitoring and reporting. Mitigation, monitoring, and reporting requirements related to marine mammals were preliminarily identified in the proposed ITR, 88 Fed. Reg. 22696 (April 13, 2023). These measures may be modified in the final ITR as NMFS considers any additional measures recommended in the public comments. If NMFS issues the final ITR and LOA to the applicant, it will include the necessary mitigation to effect the least practicable adverse impact on marine mammals, as well as monitoring and reporting requirements to be implemented by Empire.

RAUCH.SAMUEL.DEAN.1365850948 Digitally signed by RAUCH.SAMUEL.DEAN.1365850948 Date: 2023.11.21 14:50:01 -05'00'

Samuel D. Rauch, III
Deputy Assistant Administrator for Regulatory Programs

Date

6. References

Bureau of Ocean Energy Management (BOEM). 2023. *Supporting National Environmental Policy Act Documentation for Offshore Wind Energy Development Related to Glauconite Sand.* OCS Study BOEM 2023-011. 16 pp.

Empire Offshore Wind, LLC (Empire). 2023. *Empire Offshore Wind: Empire Wind Project (EW1 and EW2), Construction and Operations Plan*. Available: https://www.boem.gov/renewable-energy/empire-wind-construction-and-operations-plan.

Hare, J.A., Blythe, B.J., Ford, K.H., Godfrey-McKee, S., Hooker, B.R., Jensen, B.M., Lipsky, A., Nachman, C., Pfeiffer, L., Rasser, M. and Renshaw, K., 2022. NOAA Fisheries and BOEM Federal Survey Mitigation Implementation Strategy - Northeast US Region. NOAA Technical Memorandum 292. Woods Hole, MA. 33 pp.

National Marine Fisheries Service (NMFS). 2023. Endangered Species Act Section 7 Consultation: Biological Opinion for Construction, Operation, Maintenance, and Decommissioning of the Empire Wind Projects (EW 1 and EW 2). September.

United States Fish and Wildlife Service (USFWS). 2023. Biological Opinion on the Effects of the Empire Wind 1 and Empire Wind 2 Projects on the Federally Listed Piping Plover (*Charadrius melodus*; threatened) and rufa Red Knot (*Calidris canutus rufa*; threatened) within the Jurisdiction of the Long Island Field Office, Shirley, New York. June.

Appendix A. Anticipated Terms and Conditions of COP Approval

APPENDIX A. ANTICIPATED CONDITIONS OF CONSTRUCTION AND OPERATIONS PLAN APPROVAL

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT

Conditions of Construction and Operations Plan Approval
Lease Number OCS-A 0512
November 17, 2023

The Bureau of Ocean Energy Management's (BOEM) approval of Empire Wind Offshore LLC (Lessee or Empire Wind) conduct of activities under the Construction and Operations Plan (COP)[1] for the Empire Wind Farm, consisting of two wind farms Empire Wind 1 (EW1) and Empire Wind 2 (EW2) in Lease Area OCS-A 0512, and the Empire Wind Export Cable (Project) is subject to the conditions set forth in this document. The Department of the Interior (DOI) reserves the right to amend these conditions or impose additional conditions authorized by law or regulation on any future approvals of COP revisions.

The Lessee must maintain a full copy of these terms and conditions on every Project-related vessel and is responsible for the implementation of, or the failure to implement, each of these terms and conditions by the Lessee's contractors, consultants, operators, or designees.

Section:

[1] Empire Offshore Wind LLC. 2023. Construction and Operations Plan, Empire Wind Project (EW1 and EW2). Volumes I–II.

1. GENERAL PROVISIONS

1.1. Adherence to the Approved Construction and Operations Plan, Statutes, Regulations, Permits, and Authorizations (Planning) (Construction) (Operations) (Decommissioning).[2] The Lessee must conduct all activities as proposed in its approved COP for the Empire Wind project (Project), as stated in these terms and conditions, and as described in any final plans with which the BOEM and/or the Bureau of Safety and Environmental Enforcement (BSEE) have concurred. Additionally, the Lessee must comply with all applicable requirements in commercial lease OCS-A 0512 (Lease), statutes, regulations, consultations, and permits and authorizations issued by federal, state, and local agencies for the Project. BOEM and/or BSEE, as applicable, may issue a notice of noncompliance, pursuant to 30 C.F.R. § 585.106(b) and 30 C.F.R. § 285.400(b), if it is determined that the Lessee failed to comply with any provision of its approved COP, the Lease, the Outer Continental Shelf Lands Act (OCSLA), or OCSLA's implementing regulations. BOEM and/or BSEE may also take additional actions pursuant to 30 C.F.R. § 585.106 and 30 C.F.R. § 285.400, where appropriate.

1.1.1. As indicated in the COP and modified by the selected Alternative in the Record of Decision (ROD), the Lessee may construct and install on the Outer Continental Shelf (OCS) up to 138 wind turbine generators (WTGs), up to two offshore substations (OSSs), inter-array cables linking the individual WTGs to the OSS, and substation interconnector cables linking the OSSs, and up to two offshore export cables within the area to be described in Lease Addendum "D".

1.1.2. The Lessee shall not install on the OCS any facilities (as defined in 30 C.F.R. § 585.113) that are solely part of EW2, nor conduct any activities for EW2 that could lead to discharges into navigable waters not covered by a state Water Quality Certification prior to: (1) issuance of all necessary state and local approvals and conveyance of rights necessary for construction of the in-state portions of the EW2 export cable; (2) receipt of a Water Quality Certification pursuant to § 401 of the Clean Water Act and any needed concurrence from a state agency under the Coastal Zone Management Act for EW2.

1.2. Record of Decision (Planning) (Construction) (Operations) (Decommissioning). All mitigation measures selected in the ROD for this Project are incorporated herein by reference and are considered terms and conditions of this COP. To the extent there is any inconsistency between the language used in the ROD and that found in these terms and conditions, the language in the latter will prevail.

[2] Parenthetical indicators of (Planning) (Construction) (Operations) and/or (Decommissioning) at the start of a condition denote the primary development stage(s) to which the condition is relevant. The identification of the primary development phase(s) does not limit BOEM and BSEE's enforcement of these conditions to the identified phase(s).

1.3. Effectiveness (Construction) (Operations). This COP approval and these associated terms and conditions become effective on the date BOEM notifies the Lessee that its COP has been approved, and remain effective until the termination of the Lease, which, unless renewed, has an operations term of 25 years from the date of COP approval.

1.4. Consistency with Other Agreements and Authorizations (Planning) (Construction) (Operations) (Decommissioning). In the event that these terms and conditions are, or become, inconsistent with the terms and conditions of the Project's Biological Opinion (BiOp) issued by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) on September 8, 2023[3]; the BiOp issued by U.S. Fish and Wildlife Service (USFWS) on June 22, 2023[4]; Letters of Authorization (LOAs) issued for the Project under the Marine Mammal Protection Act (MMPA); the Section 106 Memorandum of Agreement (MOA) executed on [date], or amendments thereto; the language in the NMFS BiOp, USFWS BiOp, LOAs, Section 106 MOA or amendments thereto, will prevail. To the extent the Lessee identifies inconsistencies within or between the language in the NMFS BiOp, USFWS BiOp, LOAs, Section 106 MOA, or amendments thereto, it must direct questions regarding potential inconsistencies to BSEE and BOEM. BSEE, in consultation with BOEM, will determine how the Lessee must proceed. Activities authorized by COP approval will be subject to any terms and conditions and reasonable and prudent measures resulting from any BOEM-reinitiated consultation for the Project's NMFS BiOp or USFWS BiOp, and any stipulations resulting from amendments to the Section 106 MOA.

1.5. Variance Requests (Planning) (Construction) (Operations) (Decommissioning). The Lessee may submit a written request via email to the BOEM Office of Renewable Energy Programs Chief and/or BSEE via TIMSWeb (https://timsweb.bsee.gov/), requesting a variance from the requirements of these terms and conditions. The request must explain why compliance with a particular requirement is not technically and/or economically practical or feasible and any alternative actions the Lessee proposes to take. To the extent not otherwise prohibited by law and after consideration of all relevant facts and applicable legal requirements, BOEM and/or BSEE may grant the request for a variance if the appropriate Bureau(s) determine that the variance: (1) would not result in a change in the Project impact levels described in the Final Environmental Impact Statement (FEIS) and ROD for the Project; (2) would not alter obligations or commitments resulting from consultations performed by BOEM and BSEE under federal law in connection with this COP approval in a manner that would require BOEM to re-initiate or perform additional consultations (e.g., Endangered Species

[3] *See* BiOp Letter from Michael Pentony, Regional Administrator, US Dept of Commerce National Oceanic and Atmospheric Administration NMFS GARFO, to Karen Baker, Chief Office of Renewable Energy Programs, BOEM, Re: Endangered Species Act Section 7 Consultation (September 8, 2023), [hereinafter NMFS BiOp]. This is inclusive of the avoidance, minimization, and mitigation measures described in the proposed action and included in the BiOp's ITS.

[4] *See* BiOp Letter from Ian Drew, Field Supervisor Long Island Field Office, Fish and Wildlife Serv., to Brandi Sangunett, BOEM. (June 22, 2023), hereinafter USFWS BiOp]. This is inclusive of the avoidance, minimization, and mitigation measures described in the proposed action and included in the BiOp's ITS.

Act (ESA), Coastal Zone Management Act (CZMA), National Historic Preservation Act (NHPA), Magnuson-Stevens Fishery Conservation and Management Act (MSA)); and (3) would not alter BOEM's determination that the activities associated with the Project would be conducted in accordance with section 8(p)(4) of OCSLA. After making a determination regarding a request for variance, BOEM and/or BSEE will notify the Lessee in writing whether the appropriate Bureau(s) will allow the proposed variance from the identified requirements set forth in this COP approval. Approvals of variance requests will be made publicly available. This provision applies to the extent it is consistent with more specific provisions in these terms and conditions for variances or departures.

1.6. 48 Hour Notification Prior to Construction Activities (Construction) (Operations) (Decommissioning). The Lessee must submit a 48-hour notification to BSEE through TIMSWeb prior to the start of each of the following construction activities occurring on the OCS: seabed preparation activities such as boulder relocation and pre-lay grapnel runs, export cable installation, inter-array cable installation, WTG and OSS foundation installation, WTG tower and nacelle installation, OSS topside installation, cable and scour protection installation.

1.7. Inspections (Construction) (Operations) (Decommissioning) As provided for in Terms and Conditions Item 10 of the NMFS BiOp, the Lessee must consent to on-site observations and inspections by Federal agency personnel, including NOAA personnel during activities described in the NMFS BiOp, for the purpose of evaluating the effectiveness and implementation of measures designed to minimize or monitor incidental take.

1.8. Project Website (Planning) (Construction) (Operations) (Decommissioning). The Lessee must develop and maintain a Project website to provide a means for the public to communicate with the Lessee about the Project including fisheries communication and outreach). The website must provide a method for the public to register comments or ask questions through either a direct link to a comment form or email, or by providing the contact information (phone and/or email address), of a representative of the Lessee who will, as practicable, respond to these communications.

1.8.1. The Lessee must post construction notices and other publicly relevant information to the Project website on a monthly basis. The Project website must allow users to subscribe (or unsubscribe) to an electronic mailing list for Project update notifications.

1.8.2. The Lessee must post the following information to the Project website within 5 business days of availability.

1.8.2.1. Locations where cable target burial depths were not achieved, locations of cable protection measures, and

locations where cable burial conditions have deteriorated or changed significantly as identified in Section 2.15.

1.8.2.2. Project-specific information found in the most current Local Notices to Mariners (LNM).

1.8.2.3. Fisheries Communication Plan.

1.8.2.4. The Project Mitigation Report identified in Section 1.9. The Project Mitigation Plan must be submitted to BOEM (renewable_reporting@boem.gov) and BSEE via TIMSWeb (https://timsweb.bsee.gov/) for a 30-day review prior to being finalized.

1.8.3. Geographic information system (GIS) location data must be downloadable and packaged in an ESRI-compatible format, preferably an ESRI shapefile. Files must utilize a NAD83 UTM Zone 18 or a geographic coordinate system in NAD83. A text file with table field descriptions that contain measurement units, where applicable, must be included.

1.9. Project Mitigation Report (Planning) (Construction) (Operations) (Decommissioning). The Lessee must develop a Project Mitigation Report that reflects public engagement and consultation concerning environmental mitigation measures completed to date with the appropriate tribal nations, federal and state agencies, and regional and non-governmental organizations. The Project Mitigation Report will be a comprehensive compilation of all environmental mitigation measures or commitments required by the terms and conditions of COP approval, as well as other Federal and State authorizations and consultations (e.g., ESA, CZMA, MOA) required for the construction and operation of the Project. The Project Mitigation Report must (1) describe and provide technical details for each mitigation measure (including the type of Project impact to which it relates and the consultation, authorization, or conditions under which it is required); and (2) identify procedures to evaluate additional or modified measures that respond to impacts detected in Project monitoring and other monitoring and research studies and initiatives, including the Lessee's Fisheries Research and Monitoring Plan. The Lessee must update the Project Mitigation Report periodically, as described in such Report, for status and completion of mitigation measures.

1.10. Temporary Placement of Equipment on the OCS Outside of the Lease Area (Construction) (Operations) (Decommissioning). To the maximum extent possible, the Lessee must place all equipment, including jack-up legs, within the Lease Area (including the project easements). Subject to BSEE's concurrence and the following conditions, the Lessee may temporarily place equipment outside of the Lease Area, but in no case may the Lessee conduct activity on the OCS that is not described in the COP or place equipment on the OCS in an area for which the

Lessee has not provided all required information in the COP under 30 C.F.R. § 585.626:

1.10.1. Notification of Activities Outside of the Lease Area. If the Lessee anticipates temporarily, (*i.e.* a few days or hours) placing any equipment on the OCS outside the Lease Area, the Lessee must submit a notification to BSEE via TIMSWeb 30 days prior to such activities. The Lessee must also clearly identify and include said activities in their Construction Status submissions under Section 2.23 or their Maintenance Schedule submissions under Section 2.24. The activities will be reviewed by BSEE in coordination with BOEM to confirm that the equipment does not unreasonably interfere with other uses of the OCS. All such actions must be conducted in accordance with these terms and conditions of COP approval and all applicable requirements in the Lease, statutes, regulations, consultations, and permits and authorizations issued by federal, state, and local agencies for the Project. This requirement does not apply to anchors that have already been disclosed in an anchoring plan submitted, reviewed, and made final under condition.

1.10.2. Installation, Repair and Maintenance on the OCS Outside of the Lease Area on an Adjoining Lease. To the extent that equipment, including anchors, cannot be located within the Lease Area, and full enjoyment of the Lease requires the temporary placement of equipment in an adjoining lease, the Lessee must execute a long-term agreement with the adjoining leaseholder that describes the scope and timing of, and the manner in which the Lessee will perform, activities in the adjoining lease ("Installation, Repair and Maintenance Agreement"). If the Lessee and the adjoining leaseholder do not execute the Installation, Repair and Maintenance Agreement, then BOEM, in coordination with BSEE, may evaluate the scenario to determine if the proposed activities would result in unreasonable interference with the rights granted to the adjoining leaseholder and/or to ensure compliance with any other requirement in applicable law, and may impose any conditions deemed necessary.

1.11. Submissions (Planning) (Construction) (Operations) (Decommissioning). Unless otherwise stated, the Lessee must provide any submissions required under these conditions to BOEM[5] and/or BSEE through the following:

1.11.1. Via email to the Office of Renewable Energy Programs Project Coordinator for submissions to BOEM for Sections 1 through 4,

1.11.2. Via email to renewable_reporting@boem.gov for submissions to BOEM for Sections 5 through 8, and

[5] BOEM will notify the Lessee in writing if BOEM designates a different process for BOEM submissions.

1.11.3. Via TIMSWeb for submissions to BSEE.

2. TECHNICAL CONDITIONS

2.1. Geologic and Geophysical Data (Planning) (Construction) (Operations) (Decommissioning). The Lessee must retain all data from geological, geophysical, and geotechnical surveys used to assess shallow hazards, geologic conditions, and geotechnical characteristics, as well as archaeological, biological and benthic assessments, and overall site investigation results (pursuant to 30 C.F.R. § 585.626). Any data and information obtained from site characterization activities must be accessible to BOEM and BSEE upon request for the duration of the Lease.

2.2. Munitions and Explosives of Concern/Unexploded Ordnance Investigation (Planning). As described in the COP, the Lessee must investigate the areas of potential disturbance, for the presence of Munitions and Explosives of Concern (MEC)/Unexploded Ordnance (UXO) and evaluate the risk consistent with the As Low as Reasonably Practical (ALARP) risk mitigation principle. The ALARP risk mitigation principle requires (1) a desktop study (DTS); (2) an investigation survey to determine the presence of objects and report of findings; (3) an identification survey to determine the nature of the identified objects and report of findings; (4) MEC/UXO mitigation (avoidance, or relocation); and (5) a certification that MEC/UXO risk s from installation and operation of the facility have been reduced to ALARP levels. The Lessee must implement the mitigation methods identified in the approved COP, the DTS, and the subsequent survey report(s) following the resolution of all comments provided by BOEM and/or BSEE. In the event archaeological discoveries are made during the MEC/UXO Investigation, the Lessee must notify BOEM within 24 hours of discovery (pursuant to 30 C.F.R. § 585.702 and Lease Stipulation 4.3.7). As part of the Fabrication and Installation Report (FIR), and prior to commencing seabed preparation activities such as pre-lay grapnel run and boulder relocation and installation activities, the Lessee must make available to the approved Certified Verification Agent (CVA), BOEM, and BSEE for review the complete and final versions of information on implementation and installation activities associated with the ALARP mitigation process, including the: (1) DTS; (2) investigation surveys to determine the presence of objects; (3) identification surveys to determine the nature of the identified objects; and (4) MEC/UXO mitigation measure(s), and/or construction re-routing.

2.3. MEC/UXO Identification Survey Report (Planning). The Lessee must submit an Identification Survey Report to BOEM and BSEE for each Bureau's review and concurrence prior to the installation of facilities in the areas of potential disturbance. The report must include the following:

2.3.1. A detailed discussion of methodologies.

2.3.2. A summary and detailed description of the findings and information on planned mitigations necessary for MEC/UXO risks to reach ALARP levels, such as: detailed information on MEC/UXO relocation activities,

micrositing of facilities, changes to installation or operational activities, and cable re-routings.

2.3.3. A separate list of findings that identify conditions different from those anticipated and discussed in the DTS.

2.3.4. A statement attesting that the installation methods and MEC/UXO mitigation strategies discussed in the Fabrication and Installation Report (FIR), DTS, and/or Investigation Survey Report are consistent with the results of the Identification Survey Report, accepted engineering practices, and applicable best management practices. Alternatively, the Lessee may submit a detailed discussion of alternative installation methods and/or MEC/UXO mitigation strategies that the Lessee has determined to be appropriate given the results of the Identification Survey, accepted engineering practices, and applicable best management practices.

2.4. MEC/UXO ALARP Certification (Planning). The Lessee must provide to BOEM, BSEE, and the approved CVA, a certification confirming that MEC/UXO risks related to the installation and operation of the facility have been reduced to ALARP levels. The certification must be made by a qualified third party, provided prior to seabed preparation activities such as pre-lay grapnel run and boulder relocation, and made available with the submission of the Facility Design Report (FDR) or FIR, whichever is submitted earlier.

2.5. MEC/UXO Discovery Notification (Construction) (Operations) (Decommissioning). In the event of a confirmed MEC/UXO, the Lessee must coordinate with the U.S. Coast Guard (USCG) to ensure the MEC/UXO discovery is published in the next version of the LNM for the specified area and provide BOEM and BSEE a copy of the LNM once it is available. The Lessee must also provide the following information to BOEM (BOEM_MEC_Reporting@boem.gov), BSEE (via TIMSWeb and env-compliance-arc@bsee.gov), and relevant agency representatives within 24 hours of discovery made during post-COP activities, such as seabed clearance construction, and operations:

2.5.1. Narrative describing activities that resulted in the identification of confirmed MEC/UXO;

2.5.2. Activity at the time of discovery (e.g., survey, seabed clearance, cable installation);

2.5.3. Location (latitude [DDD°MM.MMM'], longitude [DDD°MM.MMM]), lease area, and block;

2.5.4. Water depth (meters);

2.5.5. MEC/UXO type, dimensions, and weight;

2.5.6. MEC/UXO vertical position (description of exposure or estimated depth of burial).

2.6. Munitions Response Plan for Confirmed MEC/UXO (Planning) (Construction). The Lessee must implement methods identified in the approved COP and as described in the MEC/UXO Survey Report Implementation (as referenced in Section 2.3) for MEC/UXO mitigation activities. Under all circumstances of confirmed MEC/UXO, the Lessee must demonstrate to BSEE and BOEM that avoidance through micrositing of planned infrastructure (e.g., WTGs, offshore substations, inter-array cables, or export cables) of confirmed MEC/UXO is not feasible. For confirmed MEC/UXO on the OCS where avoidance through micrositing is not feasible, the Lessee must provide a Munitions Response Plan. The Munitions Response Plan must include the following:

2.6.1. Method of munitions response (in situ disposal, or relocation through "lift and shift") and an analysis describing the identification and determination of the method chosen for each confirmed MEC/UXO;

2.6.2. Hazard analysis of the response;

2.6.3. Type and designation of work vessels, remotely operated vehicles, unmanned surface vehicles, or craft planned to be used in proximity to the MEC/UXO;

2.6.4. Contact information of the identified munitions response contractor

2.6.5. Contractor qualifications and competencies to safely carry out the response work;

2.6.6. Proposed timeline of activities;

2.6.7. Position of confirmed MEC/UXO and, if applicable, planned relocation position; (latitude [DDD°MM.MMM'], longitude [DDD°MM.MMM])

2.6.8. Potential impact of weather and sea state on munitions response operations;

2.6.9. Potential for human exposure;

2.6.10. Medical emergency procedures plan;

2.6.11. Protective measures to be implemented to reduce risk and/or monitor effects to protected species and habitats or other ocean users;

2.6.12. Plan for accidental detonation.

2.7. Munitions Response After Action Report (Planning). The Lessee must submit a Munitions Response After Action Report detailing the activity and outcome to BOEM and BSEE. The report must include the following information:

2.7.1. Narrative describing the activities that were undertaken by the Lessee, including the following:

2.7.1.1. As Found Location and, if applicable, As Left Location (latitude [DDD°MM.MMM'], longitude [DDD°MM.MMM]), lease area, and block;

2.7.1.2. Water depth (meters);

2.7.1.3. Weather and sea state at the time of munitions response;

2.7.1.4. Number and detailed characteristics (e.g., type, size, classification) of MEC items subject to response efforts;

2.7.1.5. Duration of the munitions response activities, including start and stop times;

2.7.2. Summary describing how the Lessee followed its Munitions Response Plan and any deviations from the plan;

2.7.3. Description of safety measures used, including but not limited to the presence of a USCG safety zone, notices to mariners, other USCG safety actions in place prior to taking any munitions response actions, and how security call protocols were used;

2.7.4. Results of the munitions response;

2.7.5. Description of any threats and effects to health, safety, or the marine environment;

2.7.6. Description of any effects on protected species and marine mammals and measures implemented to reduce risk and monitor effects;

2.7.7. Details and results of any geophysical surveys conducted after the completion of the munitions response activities;

2.7.8. If applicable, a description of anticipated future munitions response activities.

2.8. Safety Management System (Planning) (Construction) (Operations) (Decommissioning). Pursuant to 30 C.F.R. § 285.810, a Lessee, designated operator, contractor, or subcontractor constructing, operating, or decommissioning renewable energy facilities on the OCS must have a Safety Management System (SMS) that will guide all activities described in the approved COP (hereafter the

"Lease Area's Primary SMS"). The Lessee will submit its Lease Area's Primary SMS to BSEE via TIMSWeb within 30 days of COP approval. BSEE will review the Lease Area's Primary SMS and compare it to the regulations and requirements below (Sections 2.8.1 through 2.8.6) and verify that it is acceptable.

2.8.1. The Lease Area's Primary SMS must identify and assess risks to health, safety, and the environment associated with the offshore wind facilities and operations and must include an overview of the methods that will be used and maintained to control the identified risks.

2.8.2. Pursuant to 30 C.F.R. § 285.811, the Lease Area's Primary SMS must be functional when the Lessee begins activities described in the approved COP. The Lessee must provide to BSEE a description of any changes to the Lease Area's Primary SMS to address new or increased risk before each phase of the Project commences (i.e., construction, operation, maintenance, decommissioning). In addition, the Lessee must demonstrate to BSEE's satisfaction, the functionality of the Lease Area's Primary SMS by providing evidence of such functionality no later than 30 days[6] prior to beginning the relevant activities described in the COP. The Lessee will satisfy its requirement to demonstrate the Lease Area's Primary SMS functionality by means including but not limited to those listed in Section 2.8.5 and 2.8.6.

2.8.3. The Lessee may employ a similar SMS that it is already using elsewhere as the Lease Area's Primary SMS if, the Lessee demonstrates to BSEE the proper functioning of the similar SMS by providing certifications of that SMS from a recognized accreditation organizations (e.g., International Organization for Standardization (ISO)/International Electric Code (IEC) 45001, American National Standards Institute (ANSI) Z10, American Petroleum Institute Recommended Practices (API RP) 75 4th or later edition), or by providing reports of third-party or internal audits of the SMS. The Lessee must also provide BSEE an explanation of how the Lessee has adapted the similar, audited SMS to become the Lease Area's Primary SMS. If the Lessee uses a similar SMS as described here, the Lessee must demonstrate to BSEE's satisfaction that the SMS is functional as provided in Section 2.8.2.

2.8.4. If the Lessee does not have a similar SMS that it is using elsewhere, demonstration of functionality may include the following:

2.8.4.1. A desktop exercise in which the Lessee evaluates how the Lease Area's Primary SMS functions in response to different scenarios, including an evaluation of the strengths and weaknesses of Lessee's preparedness to control various risks

[6] Unless otherwise specified in the terms and conditions, the term "days" means "calendar days."

2.8.4.2. A description of the personnel who have been trained on the Lease Area's Primary SMS, an overview of the training content, and a description of controls the Lessee has established to ensure trained personnel's understanding of and adherence to the Lease Area's Primary SMS

2.8.4.3. A detailed description of how the Lessee intends to monitor whether the implementation of the Lease Area's Primary SMS is achieving the desired goals, and an overview of how the SMS will be adjusted as necessary to control identified risks

2.8.4.4. A description of how the Lessee intends to manage the interface with contractors, subcontractors, and other critical stakeholders

2.8.5. The Lessee must conduct periodic Lease Area Primary SMS audits and provide BSEE with a report summarizing the results of the most recent audit at least once every 3 years and upon BSEE's request. The report must include any corrective actions implemented or being implemented as a result of that audit, and an updated description of the Lease Area's Primary SMS highlighting changes that were made since the last such submission to BSEE. Following BSEE's review of the report, the Lessee must engage with and respond to BSEE until any questions or concerns BSEE may have are resolved to BSEE's satisfaction.

2.8.6. In addition to maintaining an acceptable Lease Area's Primary SMS, the Lessee, designated operator, contractor, and subcontractor(s) constructing, operating, or decommissioning renewable energy facilities on the OCS, must follow the policies and procedures of any other SMS(s) applicable to their contracted activities and to take corrective action whenever there is a failure to follow the relevant SMS(s) or where the relevant SMS(s) failed to ensure safety.

2.9. Emergency Response Procedure (Planning) (Construction) (Operations) (Decommissioning). Prior to construction of the Project, the Lessee must submit an Emergency Response Procedure to address non-routine events for review and concurrence by BSEE. The Lessee must submit any revisions of the procedure once every 3 years and upon BSEE's request, consistent with Section 5. The Emergency Response Procedure must address the following:

2.9.1. Standard Operating Procedures. The Lessee must describe the procedures and systems that will be used at Project facilities in the case of emergencies, accidents, or non-routine conditions, regardless of whether man-made or natural. The Lessee must include, as a part of the standard operating procedures of non-routine conditions, descriptions of high-consequence and low probability events including methods to address those events, including for: (1) stabilizing the situation; (2) shelter in place, rescue, or evacuation of facility personnel; (3) establishing and testing WTG rotor shutdown, braking and locking; (4)

lighting control; (5) notifying the USCG of mariners in distress or potential/actual search and rescue incidents; (6) notifying BSEE and the USCG of any events or incidents that may impact maritime safety or security; and (7) providing the USCG with environmental data, imagery, communications, and other information pertinent to search and rescue or marine pollution response.

2.9.2. Communications. The Lessee must describe the control center's capabilities to communicate with the USCG and the Lessee or contractor personnel working on the offshore lease.

2.9.3. Monitoring. The Lessee must ensure that the control center maintains the capability to monitor the Lessee's installation and operations in real time, including at night and in periods of poor visibility.

2.10. Oil Spill Response Plan (Planning). Pursuant to 30 C.F.R. § 585.627(c), the Lessee must submit an Oil Spill Response Plan (OSRP) to the BSEE Oil Spill Preparedness Division (OSPD) at BSEEOSPD_ATL_OSRPs@bsee.gov for review and approval prior to the installation of any component that may handle or store oil on the OCS. The OSRP may be lease-specific, or it may be a regional OSRP covering multiple leases. Facilities and leases covered in a regional OSRP must have the same owner or operator (including affiliates) and must be located in the Atlantic OCS region. For a regional OSRP, subject to BSEE OSPD approval, the Lessee may group leases into sub-regions for the purposes of determining worst-case discharge (WCD) scenarios, conducting stochastic trajectory analyses, and identifying response resources. The Lessee's OSRP must be consistent with the National Contingency Plan, Regional Contingency Plan, and the appropriate Area Contingency Plan(s), as defined in 30 C.F.R. § 254.6. To continue operating, the Lessee must operate consistent with the OSRP approved by BSEE. The Lessee's OSRP, including any regional OSRP, must contain the following information:

2.10.1. Bookmarks. Appropriately labeled bookmarks that are linked to their corresponding sections of the OSRP.

2.10.2. Table of Contents.

2.10.3. Record of Change. A table identifying the changes made to the current version of the OSRP and, as applicable, a record of changes made to previously submitted versions of the OSRP.

2.10.4. Facility and Oil Information. "Facility", as defined in 30 C.F.R. § 585.113, means an installation that is permanently or temporarily attached to the seabed of the OCS. An OSS and WTG, as examples, each meet this definition of facility. "Oil," as defined in 33 U.S.C. 1321(a), means oils of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with

wastes other than dredged spoil. Dielectric fluid, as an example, meets this definition of oil. The OSRP must:

2.10.4.1. List the latitude and longitude, water depth, and distance to the nearest shoreline for each facility that may handle and/or store oil.

2.10.4.2. List the oil(s) by product/brand name and corresponding volume(s) on each type of facility covered under the Lessee's OSRP.

2.10.4.3. Include a map depicting the location of each facility that may handle and/or store oil within the boundaries of the covered lease area(s) and their proximity to the nearest shoreline. The map must also feature a compass rose, scale, and legend.

2.10.5. Safety Data Sheets. The OSRP must include a safety data sheet for every type of oil present on any OCS facility in quantities equal to or greater than 100 gallons.

2.10.6. Response Organization. The OSRP must identify a trained Qualified Individual (QI), and at least one alternate, with full authority to implement removal actions and ensure immediate notification of appropriate Federal officials and response personnel. The Lessee must designate personnel to serve as trained members of an Incident Management Team (IMT) and identify them by name and Incident Command System (ICS) position in the OSRP.

2.10.6.1. "Qualified Individual" (QI) means an English-speaking representative of the Lessee who is located in the United States, available on a 24-hour basis, and given full authority to obligate funds, carry out removal actions, and communicate with the appropriate Federal officials and the persons providing personnel and equipment in removal operations.

2.10.6.2. "Incident Management Team" (IMT) means the group of personnel identified within the Lessee's organizational structure who manage the overall response to an incident in accordance with the Lessee's OSRP. The IMT consists of the IC, Command and General Staff, and other personnel assigned to key ICS positions designated in the Lessee's OSRP. With respect to the IMT, the Lessee must identify at least one alternate in the OSRP for the Incident Commander (IC), Planning Section Chief (PSC), Operations Section Chief (OSC), Logistics Section Chief (LSC), and Finance Section Chief (FSC). If a contract has been established with a third-

party IMT, the Lessee must provide evidence of such a contract must be provided in the Lessee's OSRP.

2.10.7. Notification Procedures. The OSRP must describe the procedures for spill notification. Notification procedures must include the 24-hour contact information for:

2.10.7.1. The QI and an alternate, including phone numbers and email addresses

2.10.7.2. IMT members, including phone numbers and email addresses

2.10.7.3. Federal, state, and local regulatory agencies that must be notified when a spill occurs, including, but not limited to, the National Response Center

2.10.7.4. The Oil Spill Removal Organizations (OSRO) and Spill Response Operating Teams (SROT) that are available to respond;

2.10.7.5. Other response organizations and subject matter experts that the Lessee will rely on for the Lessee's response

2.10.8. Spill Mitigation Procedures. The OSRP must describe the different discharge scenarios that could occur from the Lessee's facilities and the mitigation procedures by which the offshore facility operator and any listed/contracted OSROs would follow when responding to such discharges. The mitigation procedures must address responding to both smaller spills (with slow, low-volume leakage) and larger spills, to include the largest WCD scenario covered under the Lessee's OSRP. To achieve compliance with this section, the OSRP must include the following:

2.10.8.1. Procedures for the early detection of a spill (i.e., monitoring procedures for detecting dielectric fluid and other oil-based substances handled or stored on the facility when spilled to the ocean).

2.10.8.2. General procedures for ensuring that the source of a discharge is controlled as soon as possible after a spill occurs.

2.10.8.3. Procedures to remove oil and oiled debris from shallow waters and along shorelines.

2.10.8.4. Procedures to store, transfer, and dispose of recovered oil and oil-contaminated materials and to ensure that all disposal is consistent with Federal, State, and local requirements.

2.10.9. Resources at Risk. The OSRP must include a concise list of the sensitive resources that could be impacted by a spill. In lieu of listing sensitive resources, the Lessee may identify the areas that could be impacted by a spill from the Lessee's facility and provide hyperlinks to corresponding Environmentally Sensitive Index Maps and Geographic Response Strategies/Plans for those areas from the appropriate Area Contingency Plan(s).

2.10.10. OSRO(s) and SROT(s). The "Oil Spill Removal Organization" (OSRO) is an entity contracted by the Lessee to provide spill response equipment and/or manpower in the event of an oil spill. The "Spill Response Operating Team" (SROT) is the trained persons who deploy and operate oil spill response equipment in the event of a spill, threat of a spill, or an exercise. The OSRP must include a list (with contact information) of the OSRO(s) and SROT(s) who are under contract and/or membership agreement to respond to the WCD of oil from the Lessee's offshore facilities. Evidence of such contracts or membership agreements must be provided in the OSRP.

2.10.11. Oil Spill Response Equipment. The OSRP must include a list, or a hyperlink to a list, of the oil spill response equipment that is available to the Lessee through a contract and/or membership agreement with the OSRO(s). The OSRP must include a map that shows the oil spill response equipment storage depot(s) and planned/potential staging area(s) for the oil spill response equipment that would be deployed by the facility operators or the OSRO(s) listed in the plan in the event of a discharge.

2.10.11.1. The Lessee must ensure that the oil spill response equipment is maintained in proper operating condition.

2.10.11.2. The Lessee must ensure that all oil spill response equipment maintenance, modification, and repair records are kept for a minimum of 3 years.

2.10.11.3. The Lessee must provide oil spill response equipment maintenance, modification, and repair records to BSEE OSPD upon request.

2.10.11.4. The Lessee or the OSRO must provide BSEE OSPD with physical access to the oil spill equipment storage depots and perform functional testing of the equipment upon request.

2.10.11.5. BSEE OSPD may require maintenance, modifications, or repairs to oil spill response equipment or require the Lessee

to remove response equipment from being listed in the OSRP if it does not operate as intended.

2.10.12. Training. The OSRP must include a description of the training necessary to ensure that the QI, IMT, OSRO(s) and SROT(s) are sufficiently trained to perform their respective duties. The Lessee must ensure that the IMT, OSRO(s), and SROT(s) receive annual training. The Lessee's OSRP must provide the most recent dates of applicable training(s) completed by the QI, IMT, OSRO(s) and SROT(s). The Lessee must maintain and retain training records for 3 years and must be provide the training records to BSEE upon request.

2.10.13. Worst-Case Discharge (WCD) Scenario. The OSRP must describe the WCD scenario for the facility containing the highest cumulative volume of oil(s). For a regional OSRP covering multiple sub-regions, a WCD scenario must be described for each sub-region.

2.10.13.1. If multiple candidate WCD facilities contain the same cumulative volume of oil(s), the WCD facility is the one closest to shore.

2.10.13.2. The WCD facility must be identified on the facility map consistent with the "Facility and Oil Information" section of these Terms & Conditions.

2.10.13.3. The OSRP must identify the subset of oil spill response equipment from the inventory listed in the OSRP that will be used to contain and recover the WCD volume. The OSRP must include timeframes for response resources to deploy to the WCD facility. Timeframes must include times for equipment procurement, loadout, travel, and deployment.

2.10.14. Stochastic Trajectory Analysis. The OSRP must include a stochastic spill trajectory analysis for the WCD facility. For a regional OSRP containing multiple WCD scenarios, a stochastic trajectory analysis must be included for each WCD scenario. The stochastic trajectory analysis must:

2.10.14.1. Be based on the WCD volume.

2.10.14.2. Be conducted for the longest period that the discharged oil would reasonably be expected to persist on the water's surface, or 14 days, whichever is shorter.

2.10.14.3. Identify the probabilities for oiling on the water's surface and on shorelines, and minimum travel times for the transport of the oil over the duration of the model

simulation. Oiling probabilities and minimum travel times must be calculated for exposure threshold concentrations reaching 10 grams per square meter. Stochastic analysis must incorporate a minimum of 100 different trajectory simulations using random start dates selected over a multi-year period.

2.10.15. Response Plan Exercise. The OSRP must include a triennial exercise plan for review and concurrence by BSEE to ensure that the Lessee is able to respond quickly and effectively whenever oil is discharged from the Lessee's facilities. Compliance with the National Preparedness for Response Exercise Program guidelines will satisfy the exercise requirements of this section. If the Lessee chooses to follow an alternative exercise program, the OSRP must provide a description of that program. For a regional OSRP covering multiple sub-regions, the IMT exercise scenarios must be rotated between each sub-region within the triennial exercise period.

2.10.15.1. The Lessee must conduct an annual scenario-based notification exercise, an annual scenario-based IMT tabletop exercise (if applicable), and, during the triennial exercise period, at least one functional exercise.

2.10.15.2. The Lessee must conduct an annual oil spill response equipment deployment exercise.

2.10.15.3. The Lessee must notify BSEE OSPD at least 30 days in advance of any exercise it intends to conduct for compliance with this condition.

2.10.15.4. BSEE will advise the Lessee about the options it has to satisfy these requirements and may require changes in the type, frequency, or location of the required exercises, exercise objectives, equipment to be deployed and operated, or deployment procedures or strategies.

2.10.15.5. BSEE may evaluate the results of the exercises and advise the Lessee of any needed changes in response equipment, procedures, tactics, or strategies.

2.10.15.6. BSEE may periodically initiate unannounced exercises to test the Lessee's spill preparedness and response capabilities.

2.10.15.7. The Lessee must maintain and retain exercise records for at least 3 years and must be provide the exercise records to BSEE upon request.

2.10.16. OSRP Review and Update. The Lessee must review and update the entire OSRP at least once every 3 years and more frequently as needed, starting from the date the OSRP was initially approved. The Lessee must send a written notification to BSEE OSPD upon completion of this review and submit any updates for concurrence. BSEE OSPD may require the Lessee to make changes to the OSRP at any time if it is determined to be outdated or to contain significant inadequacies as discovered through a review of the Lessee's OSRP, information obtained during exercises or actual spill responses, or other relevant information obtained by BSEE OSPD.

2.10.17. OSRP Maintenance. The Lessee must submit a revised OSRP to BSEE OSPD within 15 days if any of the following conditions occur:

2.10.17.1. The Lessee experiences a change that would significantly reduce their oil spill response capability.

2.10.17.2. The calculated WCD volume has significantly increased.

2.10.17.3. The Lessee removes a contracted IMT, OSRO, or SROT from the Lessee's plan.

2.10.17.4. There has been a significant change to the applicable area contingency plan(s).

2.11. Cable Routings (Planning). The Lessee must submit the final Cable Burial Risk Assessment (CBRA) package and engineered cable routings for all cable routes on the OCS to BSEE for review and concurrence no later than the submittal of the relevant FDR. The final CBRA package must include a summary of final information on: (1) natural and man-made hazards; (2) sediment mobility, including high and low seabed levels, from both mobile and stable seabed, expected over the Project lifetime; (3) feasibility and effort level information required to meet burial targets; (4) profile drawings of the cable routings illustrating cable burial target depths, and (5) minimum burial depths from stable seabed to address threats to the cable including, but not limited to, anchoring risk, military activity, third party cable crossings, and fishing gear interaction. Detailed supporting data and analysis may be incorporated by reference or attachments, including relevant geospatial data. The Lessee must resolve any BSEE comments on the CBRA to BSEE's satisfaction before BSEE completes its review of the associated FDR under 30 C.F.R. § 285.700.

2.12. Cable Burial (Planning) (Construction) (Operations). The Lessee must install the export and inter-array cables using jetting, vertical injection, control flow excavation, trenching, or plowing, as described in Section 3.3.1.4 and 3.3.1.5 of the approved COP. For the approved COP, BOEM has determined the proper burial depth to be a minimum of 1.8 meters (6 feet) below stable seabed along Federal sections of the export and inter-array cables.

This depth is consistent with the approved COP. Unless otherwise authorized by BSEE, the Lessee must comply with cable burial conditions described in the COP by demonstrating proper burial depth of the installed submarine cables along at least 90 percent of the total export cable length on the OCS and at least 90 percent of the inter-array cable routing, excluding cable crossings and approaches to foundations. The Lessee must demonstrate proper burial depth by providing cable monitoring reports (Section 2.15) and final, as-built information (Section 2.22).

2.13. Cable Protection Measures (Planning) (Construction) (Operations) (Decommissioning) The export and inter-array cables must be installed using jetting, vertical injection, control flow excavation, trenching, or plowing as described in Section 3.3.1.4 and 3.3.1.5 of the approved COP. In areas where final cable burial depth is less than 1.8 meters below stable seabed, excluding within the vicinity of WTG/OSS foundations where cables are enclosed within a cable protection system the Lessee must install secondary protection only to include concrete mattresses, rock bags or rock placement and must adhere to the scour and cable protection measures in Section 5.6.5.

2.13.1. The use of cable protection measures must not exceed 10 percent of the total export cable length on the OCS or 10 percent of the inter-array cable routing, excluding cable crossings and approaches to foundations. The Lessee must employ cable protection measures when proper burial depth, as defined in Section 2.12 is not achieved. The Lessee must include design information and drawings as part of the relevant FDR and must include installation information as a part of the relevant FIR prior to installing cable protection. The Lessee must also provide BSEE with detailed drawings/information of the actual burial depths and locations where protective measures were used, no later than when the final, as-built cable drawings are submitted. The Lessee must ensure notice of locations where target burial depths were not achieved and where cable protection measures were used, including accessible graphic/geo-referenced repository for this information, is made available on the Project website (Section 1.8. Project Website).

2.13.2. If the Lessee cannot comply with the requirements in Section 2.13.1, the Lessee must request a variance under Section 1.5. As a component of its request, the Lessee must provide BSEE information explaining the proposed alternatives (including a justification of the equivalent level of protection and CVA verification of the proposed alternative) and must resolve any BSEE comments.

2.14. Crossing Agreements (Planning). The Lessee must provide final cable crossing agreements for each active, in-service submarine cable or other types of in-use infrastructure, such as pipelines, to BOEM at least 60 days before seabed preparation activities, including boulder clearance, begin for the applicable cable route(s). The Lessee must make the agreements and crossing designs available to the CVA for review unless otherwise determined by BOEM.

2.14.1. If the Lessee concludes that it will be unable to reach a cable crossing agreement, the Lessee must inform BOEM as soon as possible, and no later than 60 days before seabed preparation activities, including boulder clearance. A cable crossing agreement will not be required if BOEM has determined—at its sole discretion and based on its review of the record of relevant communications from the Lessee to owners or operators of active, in-service submarine cables or other types of in use infrastructure—that the Lessee made reasonable efforts to enter an agreement and was unable to do so. Information to support a claim of reasonable efforts may include call logs, emails, letters, or other methods of communication.

2.15. Post-Installation Cable Monitoring (Construction) (Operations). The Lessee must conduct an inspection of each inter-array and export cable to determine cable location, burial depths, the state of the cable, and site conditions within 6 months, 1 year, and 2 years of commissioning, and every 3 years thereafter (e.g., years 5, 8, 11, 14, 17, 20, and 23 after commissioning). These surveys must also be conducted within 180 days of a storm event (as defined in the Post-Storm Event Monitoring Plan, described in Section 2.19). The Lessee must provide BSEE and BOEM with a cable monitoring report within 90 days following each inspection. Inspections of the inter-array and export cables must include high-resolution geophysical (HRG) methods, involving, for example, multibeam bathymetric survey equipment; and must identify seabed features, natural and man-made hazards, and site conditions along Federal sections of the cable routing.

2.15.1. If BSEE determines that conditions along the cable corridor warrant adjusting the frequency of inspections (e.g., due to changes in cable burial or seabed conditions that may impact cable stability or other users of the seabed), then BSEE may require the Lessee to submit a revised inspection schedule for review and concurrence.

2.15.2. If BSEE determines that burial conditions have deteriorated or changed significantly and remedial actions are warranted, BSEE will notify the Lessee that the Lessee must submit the following via TIMSWeb within 90 days of being notified: a seabed stability analysis, a remedial action plan, and a schedule for completing remedial actions. All remedial actions must be consistent with the approved COP. BSEE will review the plan and schedule and provide any comments within 60 days of receiving the plan. The Lessee must resolve all comments to BSEE's satisfaction.

2.15.3. If the Lessee determines that burial conditions have deteriorated or changed significantly and remedial actions are warranted, the Lessee must submit the following to BSEE via TIMSWeb within 90 days of making the determination: the data used to make the determination, a seabed stability analysis, a plan for remedial actions, and a schedule for the proposed work. All remedial actions must be consistent with those

described in the approved COP. BSEE will review the plan and schedule and provide comments within 60 days, if applicable. The Lessee must resolve all comments to BSEE's satisfaction.

2.16. WTG and OSS Foundation Depths (Planning). In a letter dated January 10, 2020, BOEM granted a departure from 30 C.F.R. § 585.626(a)(4)(ii)), permitting the Lessee to provide the final geotechnical investigation at the proposed foundation locations in the FDR. The FDR must include geotechnical investigations at all approved foundation locations along with associated geotechnical design parameters and recommendations consistent with 30 C.F.R. § 585.626(a)(4). The geotechnical investigations at each OSS must include at a minimum, one deep boring located within the footprint of each OSS. The FDR must also show pile drivability including in areas with glauconitic sands of each foundation based on site-specific geotechnical data.

2.17. Structural Integrity Monitoring (Construction) (Operations). The Lessee must conduct annual above-water inspections to ensure structural integrity is maintained. The Lessee must inspect the condition of cathodic protection system(s) and for indications of obvious overloading, deteriorating coating systems, excessive corrosion, and bent, missing, and/or damaged members of the structure in the splash zone and above the water line. The Lessee must provide a summary of the findings in the Annual Self-Inspection Report pursuant to 30 C.F.R. § 285.824(b). See Section 2.19 for post-storm structural integrity monitoring.

2.18. Foundation Scour Protection Monitoring (Construction) (Operations) (Decommissioning). The Lessee must minimize the footprint of scour protection measures at the WTG and OSS foundations and must inspect scour protection performance. The Lessee must submit an Inspection Plan to BSEE at least 60 days prior to initiating inspection activities described in the Inspection Plan. BSEE will review the Inspection Plan and provide comments, if any, on the plan within 60 days of its submittal. The Lessee must resolve all comments on the Inspection Plan to BSEE's satisfaction and receive concurrence prior to initiating the inspection program. If BSEE does not send comments within 60 days, the Lessee may presume concurrence.

2.18.1. The Lessee must carry out an initial foundation scour inspection within 6 months of completing installation of each foundation location; thereafter at intervals not greater than 5 years and within 180 days after a storm event (as defined in the Post-Storm Event Monitoring Plan, described in Section 2.19).

2.18.2. The Lessee must provide BSEE with a foundation scour monitoring report within 90 days of completing each foundation scour inspection. If multiple foundation locations are inspected within a single survey effort, the foundation scour monitoring reports for those locations may be combined into a single foundation scour monitoring report provided

within 90 days of completing the last foundation scour inspection. The schedule of reporting must be included in the Inspection Plan for BSEE review and concurrence.

2.18.3. The Lessee must submit a plan for additional monitoring and/or mitigation to BSEE for review and concurrence if scour protection losses develop within 10 percent of the maximum loss allowance, edge scour develops within 10 percent of the maximum allowance, or spud depressions from installation affect scour protection stability.

2.19. Post-Storm Event Monitoring Plan (Construction) (Operations) (Decommissioning). The Lessee must provide a plan for post-storm event condition monitoring of the facility infrastructure, foundation scour protection, and cables to BSEE for review at least 60 days prior to commencing installation activities. The Lessee must receive BSEE's concurrence prior to commencing installation activities. Plans may be submitted separately for the cables (including cable protection), WTG and OSS. The plan must describe how the Lessee will measure and monitor environmental conditions and duration of storm events; specify the environmental condition thresholds (and their associated technical justification), above which post-storm event monitoring or mitigation is necessary; describe potential monitoring, mitigation, and damage identification methods; and state when the Lessee must notify BSEE of post-storm event related activities. At a minimum, post-storm event inspections must be conducted following a storm where conditions exceed one half the design return period. For example, a WTG platform designed for 50-year environmental conditions must be inspected following a storm event with 25-year environmental conditions. BSEE reserves the right to require post-storm mitigations to address conditions that could result in safety risks and/or impacts to the environment.

2.20. High Frequency Radar Interference Analysis and Mitigation (Planning) (Construction) (Operations). The Project has the potential to interfere with oceanographic high-frequency (HF) radar systems in the U.S. Integrated Ocean Observing System (IOOS ®), which is managed by the IOOS Office within NOAA pursuant to the Integrated Coastal and Ocean Observation System Act of 2009 (Pub. L. No. 111-11), as amended by the Coordinated Ocean Observation and Research Act of 2020 (Pub. L. No. 116-271, Title I), codified at 33 U.S.C. §§ 3601–3610 (referred to herein as "IOOS HF-radar"). IOOS HF-radar measures the sea state, including ocean surface current velocity and waves in near real-time. These data have many vital uses including tracking and predicting the movement of spills of hazardous materials or other pollutants, monitoring water quality, and predicting sea state for safe marine navigation. The USCG also integrates IOOS HF-radar data into its Search and Rescue systems. The Project is within the measurement range of eight IOOS HF radar systems listed in the table below:

Table 2.20. Identified IOOS HF-radar systems

Radar Name	Radar Operator

Amagansett SeaSonde Oceanographic HF-radar (AMAG)	Rutgers University
Bradley Beach SeaSonde Oceanographic HF-radar (BRAD)	Rutgers University
Hempstead SeaSonde Oceanographic HF-radar (HEMP)	Rutgers University
Sandy Hook SeaSonde Oceanographic HF-radar (HOOK)	Rutgers University
Loveladies SeaSonde Oceanographic HF-radar (LOVE)	Rutgers University
Moriches SeaSonde Oceanographic HF-radar (MRCH)	Rutgers University
Sea Bright SeaSonde Oceanographic HF-radar (SEAB)	Rutgers University
Seaside Park SeaSonde Oceanographic HF-radar (SPRK)	Rutgers University

2.20.1. Mitigation Requirement. Due to the potential interference with IOOS HF-radar and the risk to public health, safety, and the environment, the Lessee must mitigate unacceptable interference with IOOS HF-radar from the Project. Interference must be mitigated before rotor blades are installed within the Project and interference mitigation must continue throughout operations and decommissioning until the point of decommissioning where all rotor blades are removed. Interference is considered unacceptable if, as determined by BOEM in consultation with NOAA's IOOS Office, IOOS HF-radar performance falls or may fall outside any of the specific radar systems' operational parameters or fails or may fail to meet IOOS's mission objectives.

2.20.2. Mitigation Review. The Lessee must submit to BOEM documentation demonstrating how it will mitigate unacceptable interference with IOOS HF-radar systems. The Lessee must submit this documentation to BOEM at least 120 days prior to the installation of the first rotor blades. After the Lessee submits the documentation and after BOEM, in consultation with the NOAA IOOS Office, deems the mitigation acceptable, the Lessee must conduct activities in accordance with the proposed mitigation.

2.20.3. Mitigation Agreement. The Lessee is encouraged to enter into an agreement with the NOAA IOOS Office to implement mitigation measures, and any such Mitigation Agreement may satisfy the requirement to mitigate unacceptable interference with IOOS HF-radar. The point of contact for the development of a Mitigation Agreement with the NOAA IOOS Office is the Surface Currents Program Manager, whose contact information is available at https://ioos.noaa.gov/about/meet-the-ioos-program-office/ and upon request from BOEM. If the parties reach a mitigation agreement, the Lessee must submit the agreement to BOEM. The Lessee may satisfy its obligations under Section 2.20.2 by providing BOEM with an executed Mitigation Agreement between the Lessee and NOAA IOOS. If there is any discrepancy between Section 2.20.2 and the terms of a Mitigation Agreement, the terms of the Mitigation Agreement will prevail.

2.20.4. Mitigation Data Requirements. Mitigation required under Section 2.20.2 must address the following:

2.20.4.1. Before rotor blades are installed within the Project, and continuing throughout the life of the Project until the point of decommissioning when all rotor blades are removed, the Lessee must make publicly available via NOAA IOOS near real-time, accurate numerical telemetry of surface current velocity, wave height, wave period, wave direction, and other oceanographic data measured at Project locations selected by the Lessee in coordination with the NOAA IOOS Office.

2.20.4.2. If requested by the NOAA IOOS Office, the Lessee must share with IOOS accurate numerical time-series data of blade rotation rates, nacelle bearing angles, and other information about the operational state of each WTG in the Lease Area to aid interference mitigation.

2.20.5. Additional Notification and Mitigation.

2.20.5.1. If at any time the NOAA IOOS Office or an HF-radar operator informs the Lessee that the Project will cause unacceptable interference to an HF-radar system, the Lessee must notify BOEM of the determination and propose new or modified mitigation pursuant to Section 2.20.5.2 as soon as possible and no later than 30 days from the date on which the determination was communicated.

2.20.5.2. If a mitigation measure other than that identified in Section 2.20.2 is proposed, then the Lessee must submit information on the proposed mitigation measure to BOEM for its review and concurrence. If, after consultation with the NOAA IOOS Office, BOEM deems the mitigation acceptable, the Lessee must conduct activities in accordance with the proposed mitigations. The Lessee must resolve all comments on the documentation to BOEM's satisfaction, in consultation with the NOAA IOOS office, prior to implementation of the plan.

2.21. Critical Safety Systems (Planning) (Construction)(Decommissioning). The Lessee must provide to BSEE a qualified third-party verification of (1) the identification, (2) proper installation, and (3) commissioning of all critical safety systems and equipment. The documentation provided to BSEE must demonstrate that the qualified third party verified that the critical safety systems and equipment were identified using appropriate methodologies as defined by the operator's risk management standards, were installed and commissioned in conformity with the Original Equipment Manufacturer's (OEM's) standards and the Project's functional requirements, and are functioning properly as required by the surveillance reporting requirements in Section 2.21.5.

2.21.1. Qualified Third Party. A qualified third party must be either a technical classification society, a licensed professional engineering firm, or a registered professional engineer capable of providing the necessary certifications, verifications, and reports. The qualified third party must not have been involved in the design of the Project.

2.21.2. Critical Safety Systems and Equipment. Critical safety systems and equipment, as that term is used in this condition, are those designed to prevent or ameliorate fires, spillages, or other major accidents that could result in harm to health, safety, or the environment. Critical safety systems and equipment include but are not limited to equipment, devices, engineering controls, or system components that are designed to prevent, detect, or mitigate impacts from major accidents that could results in harm to health, safety or the environment including systems that facilitate the escape and survival of personnel (hereinafter "critical safety systems").

2.21.3. Identification of Critical Safety Systems and Equipment Risk Assessment. The Lessee must conduct a risk assessment to identify the critical safety systems and equipment within its facilities including the WTG, tower, and each OSS. The Lessee must submit the risk assessment to BSEE and the qualified third party for review no later than submission of the FDR. The Lessee must arrange with the qualified third party and provide the necessary information for a qualified third party to make a recommendation to BSEE on the acceptability of the risk assessment and its associated conclusions. The Lessee must BSEE's comments to BSEE's satisfaction before BSEE completes its review of the associated FDR under 30 C.F.R. § 285.700.

2.21.4. Installation and Commissioning Surveillance Requirements. The Lessee must ensure the proper installation and commissioning of the critical safety systems and equipment. The Lessee must arrange for a qualified third party to evaluate whether the installation and commissioning of the critical safety systems and equipment are in conformance with the OEM requirements and the Project's functional requirements. BSEE and the Lessee may agree to perform additional tests during commissioning surveillance activities. The third-party evaluation must include: (1) an examination of the commissioning records of the critical safety systems and equipment for every WTG and OSS, (2) witnessing the commissioning of the critical safety systems and equipment of 5 percent of the WTG, including at least one WTG in the first array string, and each OSS. The Lessee must arrange for a qualified third party, at a minimum, to verify the following:

2.21.4.1. The installation procedures and/or commissioning instructions supplied by the manufacturer and identified in the Project's functional requirements are adequate.

2.21.4.2. During commissioning, the Lessee is following the instructions supplied by the manufacturer and identified in the Project's functional requirements are followed.

2.21.4.3. The systems and equipment function as designed.

2.21.4.4. The final commissioning records are complete.

2.21.5. Surveillance Reporting. The Lessee must submit to BSEE surveillance records (for example, the final results and acceptance of the commissioning test by the qualified third party) or a Conformity Statement and supporting documentation (prepared consistent with International Electrotechnical Commission System for Certification to Standards Relating to Equipment for Use in Renewable Energy Applications [IECRE OD-502)]) for the critical safety systems identified in Section 2.21.2.. Surveillance records for each OSS must be submitted within two weeks of verification by the qualified third party. After the commissioning of the critical safety systems and equipment has been completed for the first WTG, the Lessee must, on a bi-weekly basis, submit the surveillance records or Conformity Statement and supporting summary documentation for all WTGs which have been verified by a qualified third party within the previous two weeks. If BSEE has not responded to the surveillance records or Conformity Statement and supporting documentation submitted by the qualified third party within 5 business days, then the Lessee may presume concurrence and continue operating. If the surveillance records or Conformity Statement and supporting documentation are not submitted within two weeks of qualified third-party verification of the commissioning of the safety systems or if BSEE objects to the submission, the facility to which the surveillance records or Conformity Statement pertains must stop operating.

2.22. Engineering Drawings (Construction) (Operations) (Decommissioning). The Lessee must compile, retain, and make available to BSEE the drawings and documents specified in Table 2.22.

Table 2.22. Engineering Drawings and Documents

Drawing Type	Time Frame to Submit "Issued for Construction" Drawings	Time Frame to Make Available Post-Fabrication Drawings	Deadline to Submit Final, As-Built Drawings
Complete set of structural drawing(s) including major structural components and evacuation routes [7]	With FDR submittal. Drawings must be reviewed and stamped by a registered professional engineer.	N/A	Submit no later than March 31st of each calendar year, for all structures installed the prior year and submitted annually until completion of installation.
Front, side, and plan view drawings [8]	With FDR submittal. Drawings must be reviewed and stamped by a registered professional engineer.	N/A	N/A
Location plat for all Project facilities[9]	With FDR submittal. Drawings must be reviewed and stamped by a registered professional land surveyor.	N/A	Submit no later than March 31st of each calendar year, for all facilities installed the prior year and updated annually until project completion. Drawings must be reviewed and stamped by a registered professional land surveyor.
Complete set of cable drawing(s)	With FDR submittal. Drawings must be reviewed and stamped by a registered professional engineer.	Prior to completion of Final FIR review as contemplated in 30 C.F.R. § 285.700(b)[10]	Submit quarterly for all facilities installed in the previous quarter.
Proposed Anchoring Plat as required by Section 5.6.2 and 7.4	120 days before commencing anchoring activities. If there are fewer than 120 days between anchoring activities and this COP approval, no later than 60 days prior to commencing anchoring activities.	N/A	N/A

[7] As required by 30 C.F.R. § 285.701(a)(4). This is applicable to the WTGs and OSSs.

[8] As required by 30 C.F.R. § 285.701(a)(3). This is applicable to the WTGs and OSSs.

As-placed Anchor Plats for all anchoring activities (as required by Section 2.22.4 and 5.6.2)	N/A	N/A	Submit 90 days after completion of an activity or construction of a major facility component(s).
Piping and instrumentation diagram(s)	With FDR submittal. Drawings must be reviewed and stamped by a registered professional engineer.	N/A	Submit quarterly for all facilities installed in the previous quarter.
Safety diagram(s)[11]	With FDR submittal. Drawings must be reviewed and stamped by a registered professional engineer.	N/A	Submit quarterly for all facilities installed in the previous quarter.
Electrical drawings, i.e. -Electrical one-line drawing(s) and Protective Relay Coordination Study/Diagram	With FDR submittal. Drawings must be reviewed and stamped by a registered professional engineer.	N/A	Submit quarterly for all facilities installed in the previous quarter.
Cause and Effect Chart	With FDR submittal.	N/A	N/A
Schematics of fire and gas-detection system(s)	With FDR submittal. Drawings must be reviewed and stamped by a registered professional engineer.	N/A	Submit quarterly for all facilities installed in the previous quarter.
Area classification diagrams	With FDR submittal.	N/A	Submit quarterly for all facilities installed in the previous quarter.

2.22.1. Engineering drawings and the associated engineering report(s) must be reviewed and stamped by a licensed professional engineer or a professional land surveyor as outlined in Table 2.22. For modified systems, only the modifications are required to be reviewed and stamped by a licensed professional engineer(s) or a professional land surveyor. The professional engineer or land surveyor must be licensed in a state or territory of the United States and have sufficient expertise and experience to perform the duties.

[9] As required by 30 C.F.R. § 285(a)(2). This is applicable for all installed assets on the OCS including scour protection, cables, WTG, OSS

[10] As-installed location must be submitted with the final FIR.

[11] Safety diagrams should depict the location of critical safety systems and equipment designed to prevent or ameliorate major accidents that could result in harm to health, safety, or the environment. This should include, but not be limited to, escape routes, station bill, fire/gas detectors, firefighting equipment, etc.

2.22.2. The Lessee must certify, in a letter accompanying the as-built drawings, that the as-built design documents have been reviewed for compliance with the applicable FDR/FIR, do not make material changes from the sealed issued for construction (IFC) drawings, and accurately represent the as installed facility. The drawings must be clearly marked "as-built."

2.22.3. The Lessee must ensure that the engineer of record submits a stamped report showing that the as-built design documents have been reviewed, do not make material changes from the IFC drawings and accurately represent the as-installed facility. The Lessee must also ensure that the engineer of record documents any differences between the IFC drawings and the as-built drawings in the stamped report and submits the report with the as-built drawings.

2.22.4. As-Placed Anchor Plats. The Lessee must provide as-placed anchor plats to BOEM and BSEE within 90 days of completion of an activity (including during operations and decommissioning) or construction of a major facility component (e.g., buoys, export cables WTGs or OSSs, and inter array cables) or decommissioning to demonstrate that seabed-disturbing activities complied with avoidance requirements for seafloor features and hazards, sensitive benthic habitat,[12] archaeological resources, and/or anomalies. As-placed plats must be certified by a professional land surveyor showing the "as-placed" location of all anchors and any associated anchor chains and/or wire ropes and relevant locations of interest or avoidance on the seafloor for all seabed disturbing activities. The plats must be at a scale of 1 inch = 1,000 feet (300 meters) with Differential Global Positioning System (DGPS) accuracy.

2.23. Construction Status. On a monthly basis, the Lessee must provide BSEE, BOEM, and the USCG with a construction status update and any changes to the construction schedule or process described in the plan required by Section 3.3.1 (Installation Schedule).

2.24. Maintenance Schedule. On a quarterly basis, the Lessee must provide BSEE and BOEM with its maintenance schedule for any planned WTG or OSS maintenance.

2.25. Pre-lay Grapnel Run Plan(s) (Planning) (Construction) The Lessee must submit Pre-lay Grapnel Run Plan(s) for BSEE review and concurrence. Each plan must be submitted at least 60 days prior to beginning the pre-lay grapnel run activities within the scope of the plan. BSEE will review and provide comments on each plan within 60 days of submittal. The Lessee must resolve BSEE's comments to

[12] Sensitive benthic habitat encompasses: benthic features (sand waves, megaripples, and ripples) and complex habitats (defined as coarse unconsolidated mineral substrates [i.e. substrates containing 5% or greater gravels], rock substrates [e.g. bedrock], and shell substrates [e.g. mussel reef] consistent with CMECS definitions as well as vegetated habitats [e.g. submerged aquatic vegetation (SAV)]), bathymetric features (such as lumps, banks, and scarps) and other areas of high habitat heterogeneity (diversity of structural elements) and complexity.

BSEE's satisfaction prior to starting activities described in the plan. If BSEE does not provide comments on the plan within 60 days of its submittal, then the Lessee may presume BSEE concurrence with the plan. The plan must be consistent and meet the conditions of the SMS in Section 2.8.

2.25.1. The plan must include the following:

2.25.1.1. A clear depiction (i.e., figures) of the location of pre-lay grapnel run activities;

2.25.1.2. A description of pre-lay grapnel run methods, including expected grapnel penetration depth, vessel specifications, and metocean limits on operation, etc.

2.25.1.3. A description of debris removal and disposal methods and applicable environmental regulations;

2.25.1.4. A description of safety distances or zones to limit pre-lay grapnel activities near third party assets. Descriptions should be consistent with Cable Crossing Agreements (Section 2.14);

2.25.1.5. A description of MEC/UXO ALARP Certified areas, which must be consistent with MEC/UXO ALARP Certification (Section 2.4);

2.25.1.6. The environmental footprint of disturbance activities and measures taken to avoid or minimize further adverse impacts to sensitive benthic habitats and fishing operations;

2.25.1.7. A summary of any consultation and outreach with resource agencies and the fishing industry in development of the plan (e.g., notifications to mariners).

2.25.2. The Lessee must submit a letter to BSEE outlining any deviations from their Pre-lay Grapnel Run Plan(s) within 90 days following the completion of pre-lay grapnel run activities within the scope of each plan.

3. NAVIGATIONAL AND AVIATION SAFETY CONDITIONS

3.1. Design Conditions (Planning) (Construction) (Operations).

3.1.1. Marking. The Lessee must mark each WTG and OSS with private aids to navigation. No sooner than 60 and no fewer than 30 days before foundation installation, the Lessee must file an application (form CG-2554, or CG-4143), with the Commander of the First Coast Guard District to establish Private Aids to Navigation (PATON), as provided in 33 C.F.R. part 66. USCG approval of the application must be obtained before the Lessee begins installation of the facilities. The lighting, marking, and signaling plan and design specifications for maritime navigation lighting must be included in the PATON application. The Lessee must:

3.1.1.1. Provide a lighting, marking, and signaling plan for review by BOEM, BSEE, and USCG, and concurrence by BOEM and BSEE at least 120 days before foundation installation may commence. The plan must conform to applicable Federal law and regulations, and guidelines, e.g., International Association of Marine Aids to Navigation and Lighthouse Authorities Recommendation G1162, *The Marking of Man-Made Offshore Structures*; USCG's Local Notice to Mariners (D01 LNM 38) or the most recent version of Ocean-Structure PATON Marking Guidance; and BOEM's Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development (April 28, 2021).

3.1.1.2. Mark each individual WTG and OSS with clearly visible, unique, alpha-numeric identification characters as agreed to by BOEM, BSEE, and USCG. The Lessee must additionally display this label on each WTG nacelle, visible from above. If the Lessee's OSS includes helicopter landing platforms, the Lessee must also display this label on the platforms visible from above.

3.1.1.3. For each WTG, install red obstruction lighting that is consistent with the Federal Aviation Administration (FAA) Advisory Circular 70/7460-lM.

3.1.1.4. Provide signage that is visible to mariners in a 360-degree arc around the structures to inform vessels of the vertical blade-tip clearance as determined at Highest Astronomical Tide (HAT).

3.1.1.5. Submit documentation to BSEE, no later than January 31 of each calendar year for all facilities installed within the preceding calendar year, of the Lessee's compliance with Sections 3.1.1.1 through 3.1.1.6.

3.1.1.6. Immediately report discrepancies in the status of all PATONs to the local USCG Sector Command Center (a timeline of when discrepancies can be resolved must be sent to USCG within 14 days of identifying the discrepancy).

3.2. Blade/Nacelle Control. The Lessee must equip all WTG rotors (blade assemblies) with control mechanisms constantly operable from the Lessee's control center.

3.2.1. Control mechanisms must enable the Lessee to immediately initiate the shutdown of any WTGs upon emergency order from the Department of Defense (DoD) or the USCG. The Lessee must initiate braking and shut down of each WTG after the shutdown order. The Lessee may resume operations only upon notification from the entity (DoD or USCG) that initiated the shutdown.

3.2.2. The Lessee must include a shutdown procedure in its Emergency Response Procedure and test the shutdown capability (functioning) of at least one WTG within the field at least annually. The Lessee must submit the results of testing with the Project's annual inspection results to BSEE.

3.2.3. The Lessee must work with the USCG to establish the proper blade configuration during WTG shutdown for USCG air assets conducting search and rescue operations.

3.2.4. The Lessee must notify USCG and BSEE in advance of trainings and exercises to test and refine notification and shutdown procedures, allow USCG and BSEE to participate in these trainings and exercises, and provide search and rescue training opportunities for USCG Command Centers, vessels, and aircraft.

3.2.5. Structure Micrositing. The Lessee must not adjust approved structure locations in a way that narrows the columns oriented north-south and the rows predominantly oriented southeast to northwest, to less than 0.6 nautical miles except for gridded position G16 and H16 which must not be less than 0.57 nautical miles apart. The Lessee must submit the final as-built structure locations as part of the as-built documentation outlined in Section 2.22.

3.3. Installation Conditions (Planning) (Construction).

3.3.1. Installation Schedule. Not less than 60 days prior to commencing offshore construction activities, the Lessee must provide USCG with a plan that describes the schedule and process for seabed preparation, export and inter-array cable installation, and installing the WTGs and OSS, including all planned mitigations to be implemented to minimize any adverse impacts to navigation while installation is ongoing.

Appropriate Local Notice to Mariners submissions must accompany the plan and its revisions.

3.3.2. Design Modifications. Any changes or modifications in the design of the Lease Area that may impact navigation safety (including, but not limited to, a change in number, size, or location of WTGs, or change in construction materials or construction method), requires written approval by BSEE.

3.3.3. Cable Burial. A detailed cable burial plan, containing the proposed locations and burial depths, must be submitted to USCG 2.22no later than the relevant FIR submittal. In accordance with Section 2.22, the Lessee must submit to BOEM a copy of the final as-built cable burial report containing a positioning list that depicts the precise location and burial depths of the entire cable system (export, interconnector, and array lines).

3.3.4. Nautical Charts/Navigation Aids. The Lessee must submit as-built cable burial reports (containing precise locations and burial depths), OSS locations and WTG locations to USCG and NOAA, consistent with Section 2.22, to facilitate government-produced and commercially available nautical charts and navigation aids.

3.4. Reporting Conditions (Planning) (Construction) (Operations) (Decommissioning).

3.4.1. Complaints. On a monthly basis, the Lessee must provide BSEE with (1) a description of any complaints received (written or oral) by boaters, fishermen, commercial vessel operators, or other mariners regarding impacts to navigation safety allegedly caused by construction or operations vessels, crew transfer vessels, barges, or other equipment; and (2) a description of remedial action(s) taken in response to complaints received, if any. BSEE reserves the right to require additional remedial action consistent with 30 C.F.R. part 285.

3.4.2. Correspondence. On a monthly basis, the Lessee must provide BSEE, BOEM, and the USCG with copies of any correspondence received from other Federal, state, or local agencies regarding navigation safety issues.

3.5. Meeting Attendance (Planning) (Construction) (Operations). As requested by BSEE, BOEM, and the USCG, the Lessee must attend meetings (i.e., Harbor Safety Committee, Area Committee) to provide briefings on the status of construction and operations, and on any problems or issues encountered with respect to navigation safety.

4. NATIONAL SECURITY CONDITIONS

4.1. Hold and Save Harmless – United States Government. (Planning) (Construction) (Operation). Whether compensation for such damage or injury might otherwise be due under a theory of strict or absolute liability or any other theory, the Lessee assumes all risks of damage or injury to any person or property that occurs in, on, or above the OCS in connection with any activities being performed by the Lessee in, on, or above the OCS, if the injury or damage to any person or property occurs by reason of the activities of any agency of the United States Government, its contractors or subcontractors, or any of its officers, agents, or employees, being conducted as a part of, or in connection with, the programs or activities of the individual military command headquarters (hereinafter "the appropriate command headquarters") listed below:

United States Fleet Forces (USFF) N46
1562 Mitscher Ave, Suite 250
Norfolk, VA 23551
(757) 836-6206

The Lessee assumes this risk, whether or not such injury or damage is caused in whole or in part by any act or omission, regardless of negligence or fault, of the United States, its contractors or subcontractors, or any of its officers, agents, or employees. The Lessee further agrees to indemnify and save harmless the United States against all claims for loss, damage, or injury in connection with the programs or activities of the appropriate command headquarters, whether the same is caused in whole or in part by the negligence or fault of the United States, its contractors or subcontractors, or any of its officers, agents, or employees and whether such claims might be sustained under a theory of strict or absolute liability or otherwise.

4.2. Riverhead NY Air Route Surveillance Radar (ARSR-4) (Construction) (Operations). To mitigate impacts on the North American Aerospace Defense Command's (NORAD's) operation of the Riverhead, NY, Air Route Surveillance Radar-4 (ARSR-4), the Lessee must complete the following:

4.2.1. Mitigation Agreement. The Lessee must enter into a mitigation agreement with the DoD/NORAD for purposes of implementing Sections 4.2.2 and 4.2.3 below. If there is any discrepancy between Sections 4.2.2 and 4.2.3 and the terms of the mitigation agreement, the terms of the mitigation agreement will prevail. Within 15 days of entering into the mitigation agreement, the Lessee must provide BOEM with a copy of the executed mitigation agreement. Within 45 days of completing the requirements in Sections 4.2.2 and 4.2.3, the Lessee must provide BOEM with evidence of compliance with those requirements. The NORAD point of contact for the development of the agreement is John Rowe: John.Rowe.14@us.af.mil. If the NORAD point of contact is

no longer active, the Lessee must identify a point of contact through the DOD Clearinghouse.

4.2.2. NORAD Notification. At least 30, but no more than 60, days prior to the completion of commissioning of the last WTG (i.e., that date by which every WTG in the Project is installed with potential for blade rotation), the Lessee must notify NORAD for Radar Adverse Impact Management (RAM) scheduling.

4.2.3. Funding for RAM Execution. At least 30, but no more than 60, days prior to the completion of commissioning of the last WTG (i.e., that date by which every WTG in the Project is installed with potential for blade rotation), the Lessee must contribute funds in the amount of $80,000 to NORAD toward the execution of the RAM. If the time gap between commissioning of the first and last WTG is 3 years or greater, the Lessee must contribute funds in the amount of $80,000 to NORAD toward the execution of the RAM when 50% of the WTG are commissioned, and an additional $80,000 to NORAD toward the execution of additional RAM when the last WTG is commissioned. This allows NORAD to manage radar adverse impacts over an extended period of construction.

4.3. Coordination with DON(Planning) (Construction) (Operations) (Decommissioning). The Lessee must enter a coordination agreement with the DoD/Department of the Navy (DON) for purposes of implementing Sections 4.3.1 and 4.3.2 below. If there is any discrepancy between Sections 4.3.1 and 4.3.2 and the terms of the coordination agreement, the terms of the coordination agreement will prevail. Within 45 days of completing the requirements in Sections 4.3.1 and 4.3.2, the Lessee must provide BOEM with evidence of compliance with those requirements. The DON point of contact for coordination is Matthew Senska: matthew.senska@navy.mil; 571-970-8400. If the DON point of contact is no longer active, the Lessee must identify a point of contact through the DOD Clearinghouse.

4.3.1. Risk Assessment of Foreign Investment and Material Vendors. The Lessee must provide the DoD and the DON with the opportunity to assess risks related to foreign investment and foreign material vendors to protect defense capabilities from compromise and exploitation by foreign actors.

4.3.2. Distributed Fiber-Optic Sensing Technology and Acoustic Monitoring Devices. To mitigate potential impacts on the DON's operations, the Lessee must coordinate with the DON on any proposal to use distributed fiber-optic sensing technology as part of the Project or associated transmission cables.

4.4. Electromagnetic Emissions. (Planning) (Construction) (Operation). Before entering any designated defense operating area, warning area, or water test area

for the purpose of carrying out any survey activities under the approved COP, the Lessee must enter into an agreement with the commander of the appropriate command headquarters to coordinate the electromagnetic emissions associated with such survey activities. The Lessee must ensure that all electromagnetic emissions associated with such survey activities are controlled as directed by the commander of the appropriate command headquarters. The Lessee must provide BOEM with a copy of the agreement within 15 days of entering into the agreement.

5. PROTECTED SPECIES[13] AND HABITAT CONDITIONS

5.1. General Environmental Conditions (Planning) (Construction) (Operations) (Decommissioning).

5.1.1. Aircraft Detection Lighting System. The Lessee must use an FAA-approved vendor for the Aircraft Detection Lighting System (ADLS), which will activate the FAA hazard lighting only when an aircraft is in the vicinity of the wind facility to reduce visual impacts at night. The Lessee must confirm the use of and submit to BOEM and BSEE, information about the FAA-approved vendor for ADLSs on WTGs and the OSS at the time the relevant FIR is submitted.

5.1.2. Marine Debris[14] Awareness and Elimination. The Lessee must submit required documents related to marine debris awareness training, reporting, and recovery (e.g., annual training compliance, incident reporting, 24-hour notices, recovery plans, recovery notifications, monthly reporting, annual survey and reporting, and decommissioning and site clearance) described in Sections 5.1.2.2 through 5.1.2.8 to BSEE via TIMSWeb with a notification email sent to marinedebris@bsee.gov.

5.1.2.1. Marine Debris Awareness Training and Certification. The Lessee must ensure that all vessel operators, employees, and contractors engaged in offshore activities pursuant to the approved COP complete marine debris awareness training initially (i.e., prior to engaging in offshore activities pursuant to the approved COP) and annually. Operators must implement a marine debris awareness training and certification process that ensures that their employees and contractors are adequately trained. The training and certification process must include the following elements:

5.1.2.1.1. Viewing a marine debris training video or training slide pack posted on the BSEE website (https://www.bsee.gov/debris) or by contacting BSEE;

5.1.2.1.2. Receiving an explanation from management personnel that emphasizes their commitment to the requirements;

5.1.2.1.3. Attendance measures (initial and annual); and

[13] As used herein, the term "protected species" means species of fish, wildlife, or plant that have been determined to be endangered or threatened under Section 4 of the Endangered Species Act (ESA). ESA-listed species are provided in 50 C.F.R. § 17.11-12. The term also includes marine mammals protected under the MMPA.

[14] Throughout this document, "marine debris" is defined as any object or fragment of wood, metal, glass, rubber, plastic, cloth, paper, or any other man-made item or material that is lost or discarded in the marine environment.

5.1.2.1.4. Recordkeeping and the availability of records for inspection by BSEE.

5.1.3. Training Compliance Report. By January 31 of each year, the Lessee must submit to BSEE an annual report that describes its marine debris awareness training process and certifies that the training process has been followed for the previous calendar year.

5.1.4. Marking. Any materials, equipment, tools, containers, and other items used in OCS activities, which are of such shape or configuration that make them likely to snag or damage fishing devices or be lost or discarded overboard, must be clearly marked with the vessel or facility identification number, and must be properly secured to prevent loss overboard. All markings must clearly identify the owner and must be durable enough to resist the effects of the environmental conditions to which they may be exposed.

5.2.4 Recovery and Prevention. Discarding debris in the marine environment is prohibited. Debris accidentally released by the Lessee into the marine environment while performing any activities associated with the lease or project must be recovered within 24 hours when the marine debris is likely to (1) cause undue harm or damage to natural resources (e.g., entanglement or ingestion by protected species); or (2) interfere with OCS uses (e.g., snagging or damaging fishing equipment, or presenting a hazard to navigation). If the marine debris was lost within the boundaries of an archaeological resource/avoidance area, or a sensitive ecological/benthic resource area, the Lessee must contact BSEE for concurrence before conducting any recovery efforts. The Lessee must take steps to prevent similar releases of marine debris and must submit a description of these preventative actions to BSEE within 30 days from the date on which the release of marine debris occurred.

5.2.5 Notification. The Lessee must notify BSEE within 24 hours of any releases of marine debris and indicate whether the released marine debris was immediately recovered. If the marine debris was not recovered, the Lessee must provide its rationale for not recovering the marine debris (e.g., marine debris is located within the boundaries of a sensitive area, recovery was not possible because conditions were unsafe, or recovery was not practicable and warranted because the released marine debris is not likely to result in items (1) or (2) listed in Section **Error! Reference source not found.**).

5.2.6 Remedial Recovery. After reviewing the notification and rationale for any decision by the Lessee to forgo recovery as described in Section 5.1.2.5, BSEE may order the Lessee to recover the marine debris if BSEE finds that the reasons provided by the Lessee in the notification

are insufficient and the marine debris would cause undue harm or damage to natural resources or interfere with OCS uses.

5.2.6.1 Recovery Plan. If BSEE requires the Lessee to recover the marine debris, the Lessee must submit a Recovery Plan to BSEE within 10 days after receiving BSEE's order. Unless BSEE objects within 48 hours after the Recovery Plan has been accepted or is in review status by BSEE in TIMSWeb, the Lessee may proceed with the activities described in the Recovery Plan. Recovery activities must be completed 30 days from the date on which marine debris was released, unless BSEE grants the Lessee an extension.

5.2.6.2 Recovery Completion Notification. Within 30 days after the marine debris is recovered, the Lessee must provide notification to BSEE that recovery was completed and, if applicable, describe any substantial variance from the activities described in the Recovery Plan that was required during the recovery efforts.

5.2.7 Monthly Reporting. The Lessee must submit to BSEE a monthly report, no later than the fifth day of the month, of all marine debris lost or discarded during the preceding month, including, if applicable, information related to 24 Hour Reporting and Recovery Plan and the referenced TIMSWeb Submittal ID (SID). The Lessee is not required to submit a report for those months in which no marine debris was lost or discarded. The report must include the following:

5.2.7.1 Project identification and contact information for the Lessee and for any operators or contractors involved;

5.2.7.2 The date and time of the incident;

5.2.7.3 The lease number, OCS area and block, and coordinates of the object's location (latitude and longitude in decimal degrees);

5.2.7.4 A detailed description of the dropped object, including dimensions (approximate length, width, height, and weight) and composition (e.g., plastic, aluminum, steel, wood, paper, hazardous substances, or defined pollutants);

5.2.7.5 Pictures, data imagery, data streams, and/or a schematic/illustration of the object, if available;

5.2.7.6 An indication of whether the lost or discarded item could be detected as a magnetic anomaly of greater than 50 nanotesla, a seafloor target of greater than 1.6 feet (0.5 meters), or a sub-bottom anomaly of greater than 1.6 feet (0.5 meters) when

operating a magnetometer or gradiometer, side scan sonar, or sub-bottom profiler in accordance with DOI's most recent, applicable guidance;

5.2.7.7 An explanation of the how the object was lost; and

5.2.7.8 A description of immediate recovery efforts and results, including photos.

5.2.8 Annual Surveying and Reporting, Periodic Underwater Surveys, Reporting of Monofilament and Other Fishing Gear Around WTG Foundations. The Lessee must monitor indirect impacts associated with charter and recreational fishing gear lost from expected increases in fishing around WTG foundations by annually surveying at least 10 of the WTGs located closest to shore in the Lease Area. Survey design and effort (i.e., the number of WTGs and frequency of reporting) may be modified only upon concurrence by BOEM and BSEE. The Lessee may conduct surveys by remotely operated vehicles, divers, or other means to determine the frequency and locations of marine debris. The Lessee must report the results of the surveys to BOEM and BSEE in an annual report, submitted by January 31, for the preceding calendar year. Annual reports must be submitted in both Microsoft Word and Adobe PDF format. Photographic and videographic materials (TIFF or Motion JPEG 2000) must be provided with the submittal of the annual report. Photographic and videographic files can also be submitted to marinedebris@bsee.gov if the files cannot be uploaded in TIMSWeb.

5.2.8.1 Annual reports must include a summary of the survey reports that includes survey date(s); contact information of the operator; location and pile identification number; photographic and/or video documentation of the survey and debris encountered; any animals sighted; and the disposition of any located debris (i.e., removed or left in place). Annual reports must also include claim data attributable to the Project from the Lessee's corporate gear loss compensation policy and procedures. Required data and reports may be archived, analyzed, published, and disseminated by BOEM and BSEE.

5.2.9 Site Clearance and Decommissioning. The Lessee must include and address information on unrecovered marine debris in the description of the site clearance activities provided in the decommissioning application required under 30 C.F.R. §§ 585.906 and 285.906.

5.3 Avian and Bat Protection Conditions.

5.3.1 The Lessee must submit all required documents related to avian and bat protection conditions in Sections 5.3.2 through Section 5.3.8 to BOEM;

to BSEE via TIMSWeb and with a notification email to protectedspecies@bsee.gov; and to USFWS Long Island Ecological Services Field Office at FW5ES_NYFO@fws.gov. The Lessee must confirm the relevant point of contact before submitting the required documents and must also confirm that the agencies have received the documents.

5.3.2 Bird-Deterrent Devices and Plan. To minimize attracting birds to operating WTGs, the Lessee must, where safety permits, install bird perching-deterrent device(s) on each WTG and OSS. The Lessee must submit a plan to deter perching on offshore infrastructure by roseate terns and other marine birds for BOEM and BSEE approval. The Lessee must resolve all comments on the Bird Perching Deterrent Plan to BOEM's and BSEE's satisfaction before the Lessee may begin installation of WTGs or OSSs. The Bird Perching Deterrent Plan must include the type(s) and locations of bird perching-deterrent devices, include a maintenance plan for the life of the project, allow for modifications and updates as new information and technology become available, track the efficacy of the deterrents, and a timeline for installation. The plan will be based on best available science regarding the efficacy of perching deterrent devices on avoiding and minimizing collision risk. The location of bird-deterrent devices must be proposed by Empire Wind based on BMPs applicable to the appropriate operation and safe installation of the devices. The Lessee must submit the Bird Perching Deterrent Plan with the FIR. The Bird Perching Deterrent Plan must be approved before the Lessee may commence installation of any WTGs or OSSs. The Lessee must also provide the location and type of bird-deterrent devices as part of the as-built submittals to BSEE.

5.3.3 Incidental Mortality Reporting. The Lessee must provide an annual report to the BOEM, BSEE, and the USFWS documenting any dead (or injured) birds or bats found on vessels and structures during construction, operations, and decommissioning. The report must contain the following information: the name of the species, date found, location, a picture to confirm species identity (if possible), and any other relevant information. Carcasses with federal or research bands must be reported to the USGS Bird Band Laboratory, available at https://www.pwrc.usgs.gov/BBL/bblretrv/. Incidental observations are extremely unlikely to document any fatalities of listed birds that may occur due to WTG collision. While this Conservation Measure appropriately requires documentation and reporting of any fatalities observed incidental to O&M activities, the ABPCMP will make clear that lack of documented fatalities in no way suggests that fatalities are not occurring. Likewise, the agencies will not presume that any documented fatalities were caused by colliding with a WTG unless there is evidence to support this conclusion. The Lessee must also submit to BOEM, BSEE, and USFWS an annual report covering each calendar year, due by

January 31, documenting the implementation of any collision measures during the preceding year.

5.3.3.1 Immediate Reporting. Any occurrence of a dead or injured ESA-listed bird or bat must be reported to the BOEM, BSEE, and USFWS as soon as practicable (taking into account crew and vessel safety), but no later than 72 hours after the sighting, and, if practicable, the dead specimen will be carefully collected and preserved in the best possible state. The BOEM will coordinate with the USFWS on procedures and required permits for processing and handling specimens.

5.3.4 Collision Minimization. Within 5 years of the commissioning of the first WTG and every 5 years thereafter for the operational life of the Project, the Lessee must provide BOEM with a review of best available scientific and commercial data on technologies and methods that have been implemented or are being studied to reduce or minimize bird collisions at WTGs. The review must be worldwide and include both offshore and onshore WTGs. This review will inform BOEM's Collision Minimization Report, consistent with Monitoring and Reporting Requirement 2 of the USFWS BiOp. Within 60 days of BOEM's issuance of the final Collision Minimization Report, the Lessee must participate in a meeting to discuss the report with BOEM, BSEE, and USFWS.

5.3.5 Navigation Lighting Upward Illumination Minimization (Planning) (Construction) (Operations). Nothing in this condition supersedes or is intended to conflict with lighting, marking, and signaling requirements of FAA, USCG, or BOEM. The Lessee must use lighting technology that minimizes impacts on avian species to the extent practicable including lighting designed to minimize upward illumination. The Lessee must provide USFWS with a courtesy copy of the final Lighting, Marking, and Signaling plan, and the Lessee's approved application to USCG to establish Private Aids to Navigation (PATON).

5.3.6 Avian and Bat Post-Construction Monitoring Plan. The Lessee must develop and implement an Avian and Bat Post-Construction Monitoring Plan (ABPCMP) based on Lessee's Empire Offshore Wind Projects (EW 1 and EW 2): Proposed Bird and Bat Monitoring Framework (9/16/22) as required by the USFWS Biological Opinion, in coordination with BSEE, the USFWS, appropriate state agencies, and other relevant regulatory agencies. Annual monitoring reports will be used to determine the need for adjustments to monitoring approaches, consideration of new monitoring technologies, and/or additional periods of monitoring. Prior to, or concurrent with, offshore construction activities, the Lessee must submit an ABPCMP for the BOEM, BSEE, and USFWS review. The BOEM, BSEE and USFWS will review the ABPCMP and provide any comments on the plan within 60 days of its submittal. The Lessee must

resolve all comments on the ABPCMP to the satisfaction of BOEM and BSEE before implementing the plan and prior to the commissioning of WTG operations. The goals of the ABPCMP will be: (1) to advance understanding of how the target species utilize the offshore airspace and do (or do not) interact with the wind farm; (2) to improve the collision estimates from the Stochastic Collision Risk Assessment for Movement model (SCRAM) (or its successor) for listed bird species; and (3) to inform any efforts aimed at minimizing collisions or other project effects on target species.

5.3.6.1 Monitoring. The Lessee must conduct monitoring as outlined in the Avian and Bat Post-Construction Monitoring Plan, which shall include use of radio-tags to monitor movement of ESA-listed birds in the vicinity of the project. The ABPCMP will allow for changing methods over time in order to regularly update and refine collision estimates for listed birds. Specific to this purpose, the plan shall include an initial monitoring phase involving deployment of Motus radio tags on listed birds in conjunction with installation and operation of Motus receiving stations on WTGs in the Lease Area following offshore Motus recommendations (https://motus.org/groups/atlantic-offshore-wind/). The initial phase may also include deployment of satellite-based tracking technologies (e.g., Global Positioning System [GPS] or Argos tags). The monitoring shall also include digital aerial surveys to monitor avoidance behavior and densities.

5.3.6.2 Annual Monitoring Reports. The Lessee must submit to BOEM, USFWS, and BSEE (via TIMSWeb and at protectedspecies@bsee.gov) a comprehensive report after each full year of monitoring (pre- and post-construction) within 6 months of completion of the survey season. The report must include all data, analyses, and summaries regarding ESA-listed and non-ESA-listed birds and bats. The BOEM, BSEE, and the USFWS shall use the annual monitoring reports to assess the need for reasonable revisions (based on subject matter expert analysis) to the ABPCMP. The BOEM, BSEE, and the USFWS reserve the right to require reasonable revisions to the ABPCMP and may require new technologies as they become available for use in offshore environments.

5.3.6.3 Post-Construction Quarterly Progress Reports. The Lessee must submit quarterly progress reports during the implementation of the ABPCMP to the BOEM, BSEE and the USFWS by the 15th day of the month following the end of each quarter during the first 12 months that the project is operational. The progress reports must include a summary of all work performed, an

explanation of overall progress, and any technical problems encountered.

5.3.6.4 Monitoring Plan Revisions. Within 30 days of submitting the annual monitoring report, the Lessee must meet with the BOEM, BSEE, USFWS, and appropriate state agencies to discuss the following: the monitoring results; the potential need for revisions to the ABPCMP, including technical refinements or additional monitoring; and the potential need for any additional efforts to reduce impacts. If, based on this annual review meeting, BOEM and the Service jointly determine that revisions to the ABPCMP are necessary, the Lessee must modify the ABPCMP. If the projected collision levels, as informed by monitoring results, deviate substantially from the effects analysis included in this Opinion, Empire Wind must transmit to the BOEM recommendations for new mitigation measures and/or monitoring methods. The frequency, duration, and methods for various monitoring efforts in future revisions of the ABPCMP will be determined adaptively based on current technology and the evolving weight of evidence regarding the likely levels of collision mortality for each listed bird species. The effectiveness and cost of various technologies/methods will be key considerations when revising the plan. Grounds for revising the ABPCMP include, but are not limited to: (i) greater than expected levels of collision of listed birds; (ii) evolving data input needs for SCRAM (or its successor); (iii) changing technologies for tracking or otherwise monitoring listed birds in the offshore environment that are relevant to assessing collision risk; (iv) new information or understanding of how listed birds utilize the offshore environment and/or interact with wind farms; and (v) coordination and alignment of tracking, monitoring, and other data collection efforts for listed birds across multiple wind farms/leases on the OCS. The Lessee shall continue implementation of appropriate monitoring activities for listed birds (under the current and future versions of the ABPCMP) until one of the following occurs: (i) the EW1 and EW2 WTGs cease operation; (ii) the Service concurs that a robust weight of evidence has demonstrated that collision risks to all two listed birds from EW1 and EW2 WTG operations are negligible (i.e., the risk of take from WTG operation is discountable); or (iii) the USFWS concurs that further data collection is unlikely to improve the accuracy or robustness of collision mortality estimates and is unlikely to improve the ability of the BOEM and the Lessee to reduce or offset collision mortality.

5.3.6.5 Operational Reporting. The Lessee must submit to the BOEM and BSEE (via TIMSWeb and at protectedspecies@bsee.gov) an

annual report summarizing monthly operational data calculated from 10-minute supervisory control and data acquisition data for all WTGs together in tabular format: the proportion of time the WTGs were operational (spinning) each month, the average rotor speed (rpm) of spinning WTGs plus 1 standard deviation, and the average pitch angle of blades (degrees relative to rotor plane) plus 1 standard deviation. Any operational data considered by the Lessee to be privileged or confidential must be clearly marked as confidential business information and will be handled by BOEM and BSEE in a manner consistent with 30 C.F.R. § 585.114.

5.3.6.6 Raw Data. The Lessee must store the raw data from all avian and bat surveys and monitoring activities using accepted archiving practices. Such data must remain accessible to the BOEM, BSEE and USFWS, upon request for the duration of the lease. The Lessee must work with the BOEM to ensure the data are publicly available. All avian tracking data (i.e., from radio and satellite transmitters) must be stored, managed, and made available to the BOEM, BSEE and the USFWS following the protocols and procedures outlined in the agency document entitled *Guidance for Coordination of Data from Avian Tracking Studies*.

5.3.7 Compensatory Mitigation for Piping Plover and Red Knot. At least 180 days prior to the start of commissioning of the first WTG, the Lessee must distribute a Compensatory Mitigation Plan to BOEM, BSEE, and the USFWS for review and comment. BOEM, BSEE, and USFWS will review the Compensatory Mitigation Plan and provide any comments on the plan to the Lessee within 60 days of its submittal. The Lessee must resolve all comments on the Compensatory Mitigation Plan to BOEM's and BSEE's satisfaction before implementing the plan and before commissioning of the first WTG. The Compensatory Mitigation Plan must provide compensatory mitigation actions to offset take of Piping Plover and Red Knot by the fifth year of WTG operation. The Compensatory Mitigation Plan must include: a) detailed description of the mitigation actions; b) the specific location for each mitigation action; c) a timeline for completion of the mitigation measures; d) itemized costs for implementing the mitigation actions; e) details of the mitigation mechanisms (e.g., mitigation agreement, applicant-proposed mitigation; and f) monitoring to ensure the effectiveness of the mitigation actions in offsetting take.

5.3.8 Bat Surveys. The Lessee must conduct acoustic bat surveys in 2023 in accordance with the Service's Range-Wide Indiana Bat & Northern Long-eared Bat Survey Guidelines (USFWS 2023a) and submit survey data to the North American Bat Monitoring Program. A negative presence survey must be submitted to the Service, the BOEM, and BSEE

to avoid additional conservation measures for tree and vegetation clearing.

5.4 Benthic Habitat and Fisheries Monitoring Conditions (Planning) (Construction) (Operations).

5.4.1 The Lessee must submit the Fisheries and Benthic Monitoring Plan to BOEM for additional revisions, to BSEE with status updates of submittals in the Annual Certification, and to NMFS Greater Atlantic Regional Fisheries Office (GARFO) Habitat and Ecosystem Services Division (HESD) at NMFS.GAR.HESDoffshorewind@noaa.gov.

5.4.2 Fisheries and Benthic Monitoring Plan. The Lessee must conduct fisheries and benthic monitoring according to the *Empire Wind Fisheries and Benthic Monitoring Plan* (Plan) to assess fisheries and benthic habitat status in the Project area pre-, during, and post-construction. The Lessee must review all NMFS GARFO comments on the Plan that BOEM provides to the Lessee and revise the Plan, as appropriate. The Lessee must resolve all comments on the Plan to BOEM's and BSEE's satisfaction prior to implementation of the revised Plan.

The Lessee must submit an annual report to BOEM, BSEE, and NMFS GARFO's Protected Resources Division (PRD) (nmfs.gar.incidental-take@noaa.gov) for benthic habitat and fisheries monitoring activities in the preceding calendar year by February 15 (i.e., the report of 2023 activities is due by February 15, 2024). The report must include a summary of all activities conducted, the dates and locations of all fisheries surveys, number of tows and duration for all trawl surveys summarized by month, number of vessel transits (port of origin and destination), and a summary table of any observations and captures of ESA listed species during these surveys. The report must also summarize all acoustic telemetry and benthic monitoring activities that occurred, inclusive of vessel transits. The Lessee must share data consistent with its data sharing plan and upon BOEM's or BSEE's request.

5.5 Protected Species Monitoring Plan Conditions (Planning) (Construction) (Operations) (Decommissioning).

5.5.1 The Lessee must submit all required documents related to protected species in Sections 5.5.2 through 5.4.10 (e.g., passive acoustic monitoring (PAM), pile driving monitoring plans, sound field verification (SFV), and vessel strike) to BOEM; BSEE via TIMSWeb with a notification email sent to ; NMFS GARFO PRD at ; NMFS's Office of Protected Resources (OPR) at ; and United States Army Corps of Engineers (USACE) at .

5.5.2 Passive Acoustic Monitoring (PAM) During Construction. The Lessee must conduct PAM to supplement visual monitoring of marine mammals

before, during, and after all monopile installations, consistent with the requirements of the final MMPA LOA.

5.5.3 Pile Driving PAM Plan. The Lessee must prepare and implement a Pile Driving PAM Plan. The Lessee must submit this plan to BOEM, BSEE, USACE, NMFS GARFO PRD, and NMFS OPR at least 180 days before impact pile driving is planned. BOEM, BSEE, and NMFS will review the plan and will provide comments within 45 days of receipt of the plan. NMFS will comment to BOEM, BSEE, and the Lessee about whether the plan is consistent with the requirements outlined in the BiOp and its Incidental Take Statement (ITS) and MMPA LOA. If NMFS determines that the plan is inconsistent with those requirements, the Lessee must resubmit a modified plan that addresses the identified issues at least 15 days before the start of the associated activity. BOEM, BSEE, and NMFS will discuss a timeline for review of the modified plan to meet the Lessee's schedule to the maximum extent practicable. The Lessee must obtain BOEM's and BSEE's concurrence with this Plan prior to the start of any pile driving. The plan must include a description of all proposed PAM equipment and hardware, the calibration data, bandwidth capability and sensitivity of hydrophones, and address how the proposed PAM will follow standardized measurement, processing methods, reporting metrics, and metadata standards for offshore wind (Van Parijs et al., 2021). The plan must describe and include all procedures, documentation, and protocols including information (i.e., testing, reports, equipment specifications) to support that it will be able to detect vocalizing whales, including the North Atlantic right whale (NARW), within the clearance and shutdown zones. This information includes deployment locations, procedures, detection review methodology, and protocols; detection ranges with and without foundation installation activities and data supporting those ranges; where PAM Operators will be stationed relative to hydrophones and protected species observers (PSOs) on pile-driving vessel calling for delay/shutdowns; and a full description of all proposed software, call detectors and their performance metrics, and filters. The plan must also incorporate the requirements relative to NARW reporting in Section 5.13.1.

The Lessee must submit, as provided on the website below, full detection data, metadata, and location of recorders (or GPS tracks, if applicable) from all real-time hydrophones used for monitoring during construction within 90 days after pile driving has ended and instruments have been pulled from the water. Reporting must use the webform templates on the NMFS Passive Acoustic Reporting System website at https://www.fisheries.noaa.gov/resource/document/passive-acoustic-reporting-system-templates. The Lessee must submit the full acoustic recordings from all the real-time hydrophones to the National Centers for Environmental Information (NCEI) for archiving, using the email or other contact information on the website above or using any updated

instructions for submission provided by NOAA, within 90 days after pile-driving has ended and instruments have been pulled from the water. Archiving requirements at https://www.ncei.noaa.gov/products/passive-acoustic-data#tab-3561 must be followed. Confirmation of both submittals must be sent to BOEM and NMFS GARFO PRD.

5.5.4 Sound Field Verification Plan. The Lessee must submit, prepare, and implement a SFV Plan prior to foundation pile driving. The Lessee must submit a SFV Plan to BOEM, BSEE, USACE, NMFS OPR, and NMFS GARFO PRD at least 180 days before impact pile driving is planned to begin. The SFV Plan must include all requirements outlined in the NMFS BiOp and ITS Term and Condition 2a-2c and 8d, including the procedures and timelines associated with modifying construction activities and identifying and implementing additional, modified, and/or alternative noise attenuation measures to reduce sound levels, should the modeled distances (assuming 10 dB attenuation) be exceeded. BOEM, BSEE, NMFS GARFO PRD, and NMFS OPR will review the plan and provide comments within 45 days of receipt of the plan. NMFS's comments to BOEM, BSEE, and the Lessee will include a determination as to whether the plan is consistent with the requirements outlined in the MMPA LOA and BiOp and its ITS. If the plan is determined to be inconsistent with these requirements, the Lessee must resubmit a modified plan that addresses the identified issues at least 15 days before the start of the associated activity; at that time, BOEM, BSEE and NMFS will discuss a timeline for review of the modified plan to meet the Lessee's schedule to the maximum extent practicable. The Lessee must obtain BOEM's and BSEE's concurrence with this Plan prior to the start of piledriving activities.

5.5.5 Long-term PAM. The Lessee must conduct long-term monitoring of ambient noise, baleen whale, and commercially important fish vocalizations in the Lease Area before, during, and following construction. The Lessee must conduct continuous[15] recording at least 1 year before construction, during construction, initial operation, and for at least 3 but no more than 10 full calendar years of operation to monitor for potential noise impacts. The Lessee must meet with BOEM and BSEE at least 60 days prior to conclusion of the third full calendar year of operation monitoring (and at least 60 days prior to the conclusion of each subsequent year until monitoring is concluded) to discuss: 1) monitoring conducted to-date, 2) the need for continued monitoring, and 3) if monitoring is continued, whether adjustments to the monitoring are warranted. The instrument(s) must be configured to ensure that the

[15] Continuous recording in this measure recognizes that PAM devices can be damaged or lost from weather and other ocean uses, mechanical failures, and general maintenance. The Lessee must make every effort to maintain the PAM system as near continuous as possible. If temporal gaps in recording are expected, the lessee must ensure that additional recorders can be deployed to fill gaps.

specific locations of vocalizing NARW anywhere within the lease area could be identified, based on the assumption of a 10 km detection range for their calls. The lessee may execute the implementation of this condition through Option 1 or Option 2, as below. The timing requirement (i.e., monitoring for at least 3 but no more than 10 full calendar years of operation) will be reevaluated by BOEM and BSEE at the end of the third year and each year subsequently thereafter at the request of the Lessee (at a maximum frequency of requests of once per year).

5.5.5.1 Option 1 – Lessee Conducts Long-term PAM. The Lessee must conduct PAM, including data processing and archiving following the Regional Wildlife Science Collaborative (RWSC) best practices to ensure data comparability and transparency. PAM instrumentation must be deployed to allow for identification of any NARW that vocalize anywhere within the lease area.

The sampling rate (minimum 10 kHz) of the recorders must prioritize baleen whale detections but must also have a minimum capability to record noise from vessels, pile-driving, and WTG operation in the lease area. The system must be configured for continuous recording over the entire year. If temporal gaps in recording are expected, the Lessee must ensure that additional recorders can be deployed to fill gaps. The Lessee must use trawl-resistant moorings to ensure that instruments are not lost and must replace any lost instruments as soon as possible. The Lessee must also notify BOEM if this occurs.

The Lessee must follow the best practices outlined in the RWSC best practices document,[16] unless otherwise required through conditions of COP approval. The best practices include engaging with the RWSC, calibrating the instruments, running QA/QC on the raw data, following the templates for reporting species vocalizations, and preparing the data for archiving at National Centers for Ecological Information (NCEI). Although section III of the RWSC best practices document specifies steps for Section 106 compliance, the Lessee must instead follow the conditions outlined in Section 7.13 and the Section 106 MOA.

In terms of data processing, the Lessee must document the occurrence of whale vocalizations (calls of North Atlantic right, humpback, sei, fin, and minke whales, as well as odontocete clicks, as available based on sample rate) using automatic or manual detection methods. In addition, data must be processed with either manual or automatic detection software to detect

[16] https://rwsc.org/wp-content/uploads/2022/12/RWSC-PAM-Data-Management-Storage-Best-Practices.pdf.

vocalizations of fish. The Lessee must submit a log of these detections as well as the detection methodology to BOEM, BSEE (at protectedspecies@bsee.gov) and NMFS (at nmfs.nec.pacmdata@noaa.gov) within 120 days following each recorder retrieval. All raw data must be sent to the NCEI Passive Acoustic Data archive on an annual basis and the Lessee must follow NCEI guidance for packaging the data and pay the fee.

5.5.5.1.1 Long-term PAM Plan. The Lessee must prepare and implement a Long-term PAM Plan under this option. No later than 120 days prior to instrument deployment and before any construction begins, the Lessee must submit to BOEM and BSEE (via TIMSWeb with a notification email to protectedspecies@bsee.gov) the Long-term PAM Plan that describes all proposed equipment (including number and configuration of instruments), deployment locations, mooring design, detection review methodology, and other procedures and protocols related to the required use of PAM. As the Lessee prepares the Long-term PAM Plan, it must coordinate with the RWSC.

BOEM and BSEE will review the Long-term PAM Plan and provide comments, if any, on the plan within 45 days of its submittal. The Lessee may be required to submit a modified Long-term PAM Plan based on feedback from BOEM and BSEE. The Lessee must address all outstanding comments to BOEM's and BSEE's satisfaction and will need to receive written concurrence from BOEM and BSEE. If BOEM or BSEE do not provide comments on the Long-term PAM Plan within 45 days of its submittal, the Lessee may conclusively presume BOEM's and BSEE's concurrence with the Long-term PAM Plan.

5.5.5.2 Option 2 - Financial and Other Contributions to BOEM's Environmental Studies Program.[17] As an alternative to conducting long-term PAM in the Lease Area, the Lessee may opt to make an financial contribution to BOEM's Environmental Studies Partnership for an Offshore Wind Energy Regional Observation Network (POWERON) initiative on an annual basis and cooperate with the POWERON team to allow access to the Lease Area for deployment, regular servicing, and retrieval of

[17] The Lessee may elect Option 2 initially or during any subsequent calendar year of monitoring, subject to agreement with BOEM and BSEE.

instruments. The Lessee's financial contribution will provide for all activities necessary to conduct PAM within the Lease Area, such as vessel and staff time for regular servicing of instruments, QA/QC on data, data processing to obtain vocalizations of sound-producing species and ambient noise metrics, as well as long-term archiving of data at NCEI. At the Lessee's request, the amount of the financial contribution will be estimated by BOEM's Environmental Studies Program. The Lessee will also be invited to contribute to discussions about the scientific approach of the POWERON initiative via the RWSC. The Lessee may request temporary withholding of the public release (placement into the NCEI public data archive) of raw acoustic data collected within the Lease Area or up to 180 days after it is collected. During this temporary hold, the Lessee may be provided a copy of the raw PAM data that was collected in the Lease Area or ROW after it has been cleared for any national security concerns under the RWSC best practices document.

5.5.6 Vessel Strike Avoidance Plan. The Lessee must submit the Vessel Strike Avoidance Plan for protected species to BOEM, BSEE, NMFS GARFO PRD, and NMFS OPR at least 90 days prior to the commencement of vessel use, with the exception of vessels deployed for the fisheries surveys. BOEM, BSEE, NMFS GARFO PRD, and NMFS OPR will review the plan and provide comments within 45 days of receipt of the plan. NMFS's comments to BOEM, BSEE, and the Lessee will include a determination as to whether the plan is consistent with the requirements outlined in the final rule/LOA and the BiOp (including Appendix A of the BiOp). If the plan is inconsistent with these requirements, the Lessee must resubmit a modified plan that addresses the identified issues at least 15 days before the start of the associated activity. At that time, BOEM, BSEE and NMFS will discuss a timeline for review and approval of the modified plan, and BOEM will notify the Lessee of this timeline. The plan must provide details on all relevant mitigation and monitoring measures for listed and protected species, minimum separation distances, vessel transit protocols from all planned ports, vessel speeds, vessel strike avoidance protocols, vessel-based observer protocols for transiting vessels, communication and reporting plans, alternative monitoring and equipment to maintain effective visual monitoring of vessel strike avoidance zones in varying weather conditions, darkness, sea states, and in consideration of the use of artificial lighting. If the Lessee plans to implement the Alternative Plan for vessel strike avoidance in transit lane(s), the plan must describe how PAM, in combination with visual observations, will be conducted to ensure the transit corridor is clear of NARWs. Consistent with the requirements of the MMPA Final Rule/LOA and the BiOp, unless and until the Plan is approved by NMFS OPR and NMFS GARFO PRD, all vessels transiting between the

operations and maintenance facility and the Lease Area, year-round, must comply with the 10-knot speed restriction.

5.5.7 Marine Mammal and Sea Turtle Monitoring Plan for Pile Driving. The Lessee must submit a Marine Mammal and Sea Turtle Monitoring Plan for Pile-Driving to BOEM, BSEE, USACE, NMFS GARFO PRD, and NMFS OPR at least 180 days before any pile driving is planned. BOEM, BSEE, NMFS GARFO PRD, and NMFS OPR will review the plan and provide comments within 45 days of receipt of the plan. NMFS's comments to BOEM, BSEE, and the Lessee will include a determination as to whether the plan is consistent with the requirements outlined in the BiOp and its ITS. If NMFS determines the plan to be inconsistent with these requirements, the Lessee must resubmit a modified plan that addresses the identified issues at least 15 days before the start of the associated activity; at that time, BOEM, BSEE, NMFS GARFO PRD, and NMFS OPR will discuss a timeline for review and approval of the modified plan to meet the Lessee's schedule to the maximum extent practicable. The Lessee must obtain BOEM's and BSEE's concurrence with the Marine Mammal and Sea Turtle Monitoring Plan before starting any pile driving. The plan(s) must include: a description of how all relevant mitigation and monitoring requirements contained in the NMFS BiOp incidental take statement will be implemented, a pile driving installation summary and sequence of events, a description of all training protocols for all project personnel (PSOs, PAM Operators, trained crew lookouts, etc.), a description of all monitoring equipment and evidence (i.e., manufacturer's specifications, reports, testing) that the Lessee can use to effectively monitor and detect ESA listed marine mammals and sea turtles in the identified clearance and shutdown zones (i.e., field data demonstrating reliable and consistent ability to detect ESA listed large whales and sea turtles at the relevant distances in the conditions planned for use), communications and reporting details, and PSO monitoring and mitigation protocols (including number and location of PSOs) for effective observation and documentation of sea turtles and ESA listed marine mammals during all pile driving events. The plan(s) must demonstrate sufficient PSO and PAM Operator staffing (in accordance with watch shifts), PSO and PAM Operator schedules, and contingency plans for instances if additional PSOs and PAM Operators are required. The Plan must detail all plans and procedures for sound attenuation, including procedures for adjusting the noise attenuation system(s) and available contingency noise attenuation measures/systems if distances to modeled isopleths of concern are exceeded during SFV. The plan must also describe how the Lessee would determine the number of sea turtles exposed to noise above the 175 decibel (dB) harassment threshold during impact pile driving of WTG and OSS foundations and how the Lessee would determine the number of ESA listed whales exposed to noise above the Level B harassment threshold during impact pile driving of WTG and OSS foundations. If any clearance or shutdown zones are

expanded, the Lessee must submit a proposed monitoring plan describing the location of all PSOs to NMFS, BOEM and BSEE for review. The Lessee must resolve comments to the proposed monitoring plan to BOEM's and BSEE's satisfaction and must conduct activities in accordance with the plan.

5.5.8 Reduced Visibility Monitoring Plan/Nighttime Pile Driving Monitoring Plan. The Lessee must submit the Reduced Visibility Monitoring/Nighttime Pile Driving Monitoring Plan (or plans if separate plans are submitted) to BOEM, BSEE, USACE, and NMFS GARFO PRD at least 180 days before impact pile driving is planned to begin unless specified differently under the LOA. BOEM, BSEE, and NMFS will review the Reduced Visibility Monitoring Plan/Nighttime Pile Driving Monitoring Plan and provide comments within 45 days of receipt of the plan. NMFS GARFO PRD's comments to BOEM, BSEE, and the Lessee will include a determination as to whether the plan is consistent with the requirements outlined in the BiOp and its ITS. The Lessee must obtain BOEM's and BSEE's concurrence with the Reduced Visibility Monitoring Plan/Nighttime Pile Driving Monitoring Plan prior to the start of pile driving. The plan must contain a thorough description of how the Lessee will monitor pile driving activities during reduced visibility conditions (e.g. rain, fog) and at night, including proof of the efficacy of monitoring devices (e.g., mounted thermal/infrared camera systems, hand-held or wearable night vision devices NVDs, spotlights) in detecting ESA listed marine mammals and sea turtles over the full extent of the required clearance and shutdown zones, including demonstration that the full extent of the minimum visibility zones (1,500 m for marine mammals, 500 m for sea turtles) can be effectively and reliably monitored in reduced visibility conditions. The plan must identify the efficacy of the technology at detecting marine mammals and sea turtles in the clearance and shutdown zones. The plan must include a full description of the proposed technology, monitoring methodology, and data demonstrating that marine mammals and sea turtles can reliably and effectively be detected within the clearance and shutdown zones for monopiles before, during, and after impact pile driving at night. Additionally, this Plan must contain a thorough description of how the Lessee will monitor pile driving activities during daytime when unexpected changes to lighting or weather occur during pile driving that prevent visual monitoring of the full extent of the clearance and shutdown zones. Without concurrence on this plan, no pile driving may be initiated later than 1.5 hours prior to civil sunset.

5.6 Pre-Seabed Disturbance Conditions (Planning) (Construction) (Operations) (Decommissioning).

5.6.1 The Lessee must submit all required documents related to pre-seabed disturbance and specified in Sections 5.6.2 to 5.6.5 to BOEM, BSEE, and

NMFS GARFO HESD at NMFS.GAR.HESDoffshorewind@noaa. Where USACE submissions are required in Section 5.6, such submissions shall be sent to CENAN-R-Permit_App@usace.army.mil.

5.6.2 Anchoring Plan(s). The Lessee must prepare and implement an Anchoring Plan(s) for all areas where anchoring occurs and jack-up barges are used during construction and operations/maintenance within 1,640 feet (500 meters) of habitats, resources, and submerged infrastructure that are sensitive, including sensitive benthic habitats; boulders ≥ 0.5 meters; ancient submerged landform features (ASLFs); known and potential shipwrecks; potentially significant debris fields; potential hazards; third-party infrastructure; and any related facility installation activities (such as cable, WTG, and OSS installation). The Lessee must provide to all construction and support vessels the locations where anchoring and jack-up barges must be avoided to the extent technically and/or economically practicable or feasible, including sensitive benthic habitats; boulders ≥ 0.5 meters; ancient, submerged landform features; known and potential shipwrecks; potentially significant debris fields; potential hazards; and any related facility installation activities (such as cable, WTG, and OSS installation). Dynamic positioning systems should be used in these areas instead of anchoring, as practicable. If anchoring is necessary at these locations, then all vessels deploying anchors must extend the anchor lines to the extent practicable to minimize the number of times the anchors must be raised and lowered to reduce the amount of habitat disturbance, unless the anchor chain sweep area includes sensitive benthic habitat that may be impacted by the chain sweep. On all vessels deploying anchors, the Lessee must use mid-line anchor buoys to reduce the amount of anchor chain or line that touches the seabed, unless the Lessee demonstrates, and BOEM and BSEE accept, that (1) the use of mid-line anchor buoys to reduce the amount of anchor chain or line that touches the seabed is not technically practicable or feasible; or (2) a different alternative is as safe and provides the same or greater environmental protection. If placement of jack-up barge spud cans is necessary in sensitive benthic habitats, locations for the spud cans must be selected to avoid or minimize impacts according to the following prioritized list, including complex habitat sub-types (using NMFS complexity categories): (i) complex habitats with boulders; (ii) complex habitats absent boulders; (iii) heterogeneous complex habitats; (iv) biogenic habitat (i.e., clam beds); and (v) areas with benthic or bathymetric features,[18] as technically practicable or feasible. Any instances where the Lessee believes there is technical infeasibility must be supported by a technical feasibility analysis, as appropriate, for review and concurrence by BOEM and BSEE. Benthic habitat (NOAA complexity categories) and Benthic Feature/Habitat Type

[18] Benthic features are defined as sand waves, megaripples, and ripples; Bathymetric features are defined as topographic features of the seafloor such as lumps, scarps, ledges, and banks.

maps in conjunction with backscatter, bathymetry, and boulder layers should be used to inform the anchoring plan.

5.6.2.1 The Lessee must provide proposed Anchoring Plan(s) to BOEM and BSEE with a notification to NMFS GARFO HESD for a 60-day review at least 120 days before anchoring activities and construction begins. The Lessee must resolve all comments on the Anchoring Plan(s) to BOEM's and BSEE's satisfaction before conducting any OCS seabed-disturbing activities that require anchoring. The final version of each Anchoring Plan must be provided to NMFS and USACE.

5.6.3 Boulder Identification and Relocation Plan(s). The Lessee must submit Boulder Identification and Relocation Plan(s) to BSEE and BOEM for review and concurrence. The plan(s) must detail how the Lessee will avoid or minimize impacts to sensitive benthic habitats and relocate boulders as close as practicable to the original location, in areas of soft bottom but immediately adjacent to similar habitat. The plan should use benthic habitat (NOAA complexity categories) and benthic feature/habitat type maps in conjunction with backscatter and boulder layers to inform the siting of boulders. The plan(s) must include sufficient scope to mitigate boulders for facility installation and operation risks. The plan must be consistent with and meet the conditions of the SMS in Section 2.8. The plan(s) must include the following for boulders that are proposed to be relocated:

5.6.3.1 A summary and detailed description of surface and subsurface boulders greater than 0.5 meters in diameter, and locations along the cable routes and WTG areas where such boulders have been found

5.6.3.1.1 The plan(s) must be submitted to BOEM and BSEE to coordinate with NMFS GARFO HESD for a 60-day review, 120 days prior to boulder relocation activities within the scope of the plan. The Lessee must resolve all comments on the Boulder Identification and Relocation Plan(s) to BOEM's and BSEE's satisfaction prior to implementation of each plan. If BOEM or BSEE do not provide comments on a plan within 60 days of its submittal, then the Lessee may presume concurrence with the plan. A copy of the final plan(s) must be provided prior to construction to USACE and NMFS GARFO HESD at NMFS.GAR.HESDoffshorewind@noaa.gov.

5.6.3.1.2 A detailed summary of methodologies to be used in boulder identification, including geological and geophysical survey results;

5.6.3.1.3 A clear depiction (i.e., figures) of the location of boulder relocation activities specified by activity type (e.g., pick or plow, removal, or placement) and overlaid on multibeam backscatter data;

5.6.3.1.4 A description of boulder removal and/or relocation methods for each type of boulder relocation activity and technical feasibility constraints, including capacity of crane used in grab systems, vessel specifications and metocean limits on operation, etc.;

5.6.3.1.5 The environmental footprint of disturbance activities by habitat type and measures taken to avoid further adverse impacts to archaeological resources, sensitive benthic habitats and fishing operations;

5.6.3.1.6 A comprehensive list and shapefile of locations of boulders that would be relocated (latitude, longitude), boulder dimensions (meters), buffer radius (meters), areas of active (within last 5 years) bottom trawl fishing (latitude, longitude), areas where boulders > 2 meters in diameter are anticipated to occur (latitude, longitude), and identification of approximate areas to which boulders would be relocated (latitude, longitude);

5.6.3.1.7 The measures taken to minimize the quantity of seafloor obstructions from relocated boulders in areas of active bottom trawl fishing, as technically and/or economically feasible;

5.6.3.1.8 A description of safety distances or zones to limit boulder relocation near third part assets;

5.6.3.1.9 A description of MEC/UXO ALARP Certified areas, which should be consistent with MEC/UXO ALARP Certification (Section 2.4);

5.6.3.1.10 A summary of any consultation and outreach with resource agencies and the fishing industry in development of the plan (e.g., notifications to mariners);

5.6.3.1.11 A statement of consistency with the Micrositing Plan (Section 5.6.3).

5.6.3.2 The Lessee should provide USCG, NOAA, USACE and the local harbormaster with a comprehensive list and shapefile of positions and areas to which boulders greater than 2 meters would be relocated (latitude, longitude) at least 60 days prior to boulder relocation activities.

5.6.3.3 Boulder Relocation. The Lessee must implement methods identified in the approved COP and described in the Boulder Identification and Relocation Plan (Section **Error! Reference source not found.**) for boulder relocation activities. The Lessee must consider the spatial extent of boulder relocation in the micrositing of WTGs and OSS foundations and inter-array and export cables for this Project and must relocate boulders as close as practicable in areas immediately adjacent to existing similar habitat. The relocation of boulders must be consistent with the Project easement.

5.6.3.4 Boulder Relocation Report. The Lessee must provide to BSEE and BOEM and make available to the approved CVA a Boulder Relocation Report. The report must include a post-relocation summary of the Boulder Relocation activities and information to certify boulder risks related to the installation and operation of the facility have been properly mitigated. The report must also identify boulders that could not be relocated with documentation of technical feasibility concerns, including information on how, if at all, the final boulder placement differs from the Boulder Relocation Plan and why such changes were necessary. The report must be submitted within 60 days of completion Boulder Relocation. The Lessee must also provide BOEM and BSEE a comprehensive list and shapefile of boulder locations to which boulders were relocated (latitude, longitude), boulder dimensions (meters), any safety distances or zones to limit boulder relocation near third-party assets (meters), and areas of active (within last 5 years) bottom trawl fishing (i.e., as a raster file for use in ArcGIS).

5.6.4 Micrositing Plan(s). The Lessee must prepare and implement Micrositing Plan(s) that describes how inter-array cables and export cable routes will be microsited to avoid or minimize impacts to sensitive benthic habitats (defined above), potential MEC/UXO and confirmed MEC/UXO. The plan(s) must specifically describe how inter-array and export cable routes will be microsited to avoid or minimize impacts to sensitive benthic habitats, including boulders ≥ 0.5 meters, as technically and/or economically practicable or feasible. The plan(s) must describe

MEC/UXO ALARP Certified areas, which should be consistent with MEC/UXO ALARP Certification (Section 2.4). To the extent practicable, cables should cross sensitive benthic habitat areas perpendicularly at the narrowest points; cables unable to avoid benthic features such as sand waves should be sited along natural benthic contours within troughs/lows, to maximize cable burial while minimizing disturbance to local submarine topography. The Lessee must submit detailed supporting data and analysis as part of the FDR or FIR, including relevant geophysical and geospatial data. The submission of the data may be incorporated by reference or submitted as an attachment to the FDR or FIR. The Micrositing Plan(s) must be consistent with MEC/UXO ALARP Certification (Section 2.4), Cable Routings (Section 2.11) and the Boulder Identification and Relocation Plan(s) (Section **Error! Reference source not found.**). The Micrositing Plan(s) must include a figure for each microsited cable segment, including benthic habitat delineations showing sensitive benthic habitat and locations of boulders ≥ 0.5 meters. The plans must include a figure depicting large boulder locations, multibeam backscatter returns, and the proposed microsited locations for cables. Any instances where the Lessee believes there is technical or economic infeasibility must be supported by a technical or economic feasibility analysis, as appropriate, for review and concurrence by BOEM and BSEE.

5.6.4.1 For cables that cannot be microsited to avoid impacts to sensitive benthic habitat or boulders ≥ 0.5 meters, the micrositing plan must identify technically and/or economically practicable or feasible impact minimization measures and use the following prioritized list, including complex habitat sub-types (using NMFS complexity categories), to avoid during micrositing:

5.6.4.1.1 Complex habitats with boulders;

5.6.4.1.2 Complex habitats absent boulders;

5.6.4.1.3 Heterogeneous complex habitats;

5.6.4.1.4 Biogenic habitats (i.e., clam beds)

5.6.4.1.5 Areas with benthic or bathymetric features

5.6.4.2 The Micrositing Plan(s) must be submitted to BOEM and BSEE to coordinate with NMFS GARFO HESD for a 60-day review, 120 days prior to site preparation activities for cables and WTGs within the scope of the plan. The Lessee must resolve all comments on the Micrositing Plan(s) to BOEM's and BSEE's satisfaction prior to implementation of each plan. The final

version of each Micrositing Plans must be provided to NMFS and USACE.

5.6.5 Scour and Cable Protection Plan(s) (Planning) (Construction). The Lessee must prepare and implement Scour and Cable Protection Plan(s) that includes descriptions and specifications for all scour and cable protection materials. The plan(s) must facilitate the avoidance and minimization of impacts to sensitive benthic habitats (defined above), including sensitive benthic habitats and boulders ≥ 0.5 meters. Each plan must include a depiction of the location and extent of proposed scour or cable protection, the habitat delineations (NOAA complexity categories map) for the areas of proposed scour and cable protection, and detailed information on the proposed scour or cable protection materials for each area and habitat type. Benthic habitat (NOAA complexity categories) and benthic geature/habitat type project maps in conjunction with backscatter, bathymetry and boulder layers should be used to inform the plan(s).

5.6.5.1 The Lessee must avoid the use of engineered stone or concrete mattresses in complex habitat,[19] as practicable. The Lessee must ensure that any materials used for scour and cable protection measures consisting of natural or engineered stone does not inhibit epibenthic growth and provides three-dimensional complexity in height and in interstitial spaces, as practicable. If concrete mattresses are necessary, bioactive concrete (i.e., with bio-enhancing admixtures) must be used as practicable as the primary scour protection (e.g., concrete mattresses) or veneer to support biotic growth. The Lessee must minimize the use of scour protection to the minimum amount necessary to accomplish the purpose.

5.6.5.2 Cable protection measures must have tapered or sloped edges to reduce hangs for mobile fishing gear. The Lessee must avoid the use of plastics/recycled polyesters/net material (i.e., rock-filled mesh bags, fronded mattresses) for scour protection.

5.6.5.3 Any instances where the Lessee believes there is technical infeasibility must be supported by a technical feasibility analysis, as appropriate, for review and concurrence by BOEM and BSEE.

5.6.5.4 The Scour and Cable Protection Plan(s) must be submitted to BOEM and BSEE to coordinate with NMFS GARFO HESD for a 60-day review, at least 120 days prior to placement of scour and cable protection within the area covered by the scope of the Plan.

[19] Complex habitat is a subset of sensitive benthic habitat and is defined as coarse unconsolidated mineral substrates [i.e. substrates containing 5% or greater gravels], rock substrates [e.g. bedrock], and shell substrates [e.g. mussel reef] consistent with CMECS definitions as well as vegetated habitats [e.g. SAV].

The Lessee must resolve all comments on each Plan to BOEM's and BSEE's satisfaction before placement of the scour and cable protection materials. The final version of the Scour and Cable Protection Plan(s) must be provided to BSEE, NMFS and USACE.

5.6.6 WTG Removal. To the extent it is technically and/or economically feasible and practicable for the Lessee to construct fewer than 54 WTGs in EW1, the Lessee must prioritize removal of the six WTG positions at the farthest northwest section of EW1. The order of preference for removal is B01, C01, B02, D02, B03, and D03.

5.6.7 Avoid Zinc Anodes. To the extent it is technically and/or economically practicable or feasible, the Lessee must avoid using Zinc sacrificial anodes on external components of WTG and OSS foundations to reduce the release of metal contaminants in the water column.

5.7 Post-Seabed Disturbance Conditions (Construction) (Operations).

5.7.1 Berm Survey and Report. Where plows, jets, grapnel runs, or other similar methods are used, post-construction surveys capable of detecting bathymetry changes of 0.5 meters or less must be completed to determine the height and width of any created berms. If there are bathymetric changes in berm height greater than 1 meter above grade, the Lessee must develop and implement a Berm Remediation Plan to restore created berms to match adjacent natural bathymetric contours (isobaths), as technically and/or economically practical or feasible. The Lessee must submit the Berm Remediation Plan to BOEM and BSEE to coordinate with NMFS for a 60-day review within 90 days of completion of the post-construction survey where the change was detected. BOEM and BSEE will also review the plan to determine if the scope of activities (e.g., methods, disturbance area, vessel trips, emissions) is within the already completed National Environmental Policy Act analysis and ESA and EFH consultations and, if not, will complete additional environmental review and consultations. The Lessee must resolve all comments on the Berm Remediation Plan to BOEM's and BSEE's satisfaction prior to initiating restoration activities. The final version of the Berm Remediation Plan must be provided to BOEM, BSEE, NMFS and USACE.

5.8 Endangered and Threatened Species Conditions for Fishery Monitoring (Planning) (Construction) (Operations).

5.8.1 The Lessee must submit all required documents related to endangered and threatened species conditions for fishery monitoring in Sections 5.8.2 through 5.8.5 (e.g., marine debris, visual and PSOs, take, and annual reporting) to BOEM renewable_reporting@boem.gov, BSEE via TIMSWeb with a notification email sent to protectedspecies@bsee.gov or

marinedebris@bsee.gov (if related to marine debris/lost gear), USACE at CENAN-R-Permit-App@usace.army.mil, and NMFS GARFO PRD at nmfs.gar.incidental-take@noaa.gov.

5.8.2 The Lessee must ensure that any lost survey gear is reported and recovered according to the Marine Debris Awareness and Elimination conditions in 5.1.2. All lost gear must also be reported to NMFS GARFO and BSEE within 24 hours of the documented time when gear is discovered to be missing or lost. This report must include information on any markings on the gear and any efforts undertaken or planned to recover the gear.

5.8.2.1 All vessels must comply with applicable vessel speed restrictions.

5.8.2.2 Marine mammal monitoring must occur prior to, during, and after haul-back of fisheries gear. If a marine mammal is determined to be at risk of interaction with the deployed gear, all gear must be immediately removed.

5.8.2.3 If marine mammals are sighted in the area within 15 minutes before deploying gear and are considered to be at risk of interaction with the research gear, then the sampling station must be either moved or canceled, or the activity must be suspended, until there are no sightings of any marine mammal for 15 minutes within 1 nautical mile (1,852 meters) of sampling location. This information must be included in PSO reporting.

5.8.2.4 The Lessee must ensure all vessels deploying fixed gear have adequate disentanglement equipment (i.e., knife and boathook) onboard. Any disentanglement must occur consistent with the Northeast Atlantic Coast Sea Turtle Disentanglement Network Guidelines and the procedures described in "Careful Release Protocols for Sea Turtle Release with Minimal Injury."

5.8.3 Conditions for Trawl Surveys.

5.8.3.1 The Lessee must ensure all vessels have at least one survey team member onboard each trawl survey who has completed Northeast Fisheries Observer Program (NEFOP) observer training (or another training in protected species identification and safe handling, inclusive of taking genetic samples from Atlantic sturgeon), or equivalent training, within the last 5 years. Reference materials for identification, disentanglement, safe handling, and genetic sampling procedures must be available on board each survey vessel. This requirement applies to any trips where gear is set or hauled. Documentation of training must be provided to BOEM and BSEE within 48 hours upon request. If

the Lessee will deploy non-NEFOP trained observers, the Lessee must submit a plan to BOEM, BSEE, and NMFS GARFO describing the training that will be provided to the survey observers. The Lessee must submit the PSO Training Plan for Trawl Surveys as soon as possible after issuance of the Project's BiOp but no later than 15 days prior to the start of trawl surveys for which a non-NEFOP trained observer will be deployed. The Lessee must inform BOEM and BSEE of any response it receives from NMFS GARFO on this plan before starting any trawl surveys where the non-NEFOP trained observer will be deployed. This plan must include a description of the elements of the training (i.e., curriculum, virtual or hands on, etc.) and identify who will carry out the training and their qualifications. Once the training is complete, confirmation of the training and a list of trained survey staff must be submitted to NMFS; this list must be updated if additional staff are trained for future surveys. In all cases, a list of trained survey staff must be submitted to NMFS at least one business day prior to the beginning of the survey.

5.8.3.2 The Lessee must ensure that any sea turtles or Atlantic sturgeon incidentally caught and/or collected in any fisheries survey gear are identified to species or species group and reported to BOEM, BSEE, and NMFS GARFO. Each individually ESA-listed species incidentally caught and/or collected must then be properly documented using appropriate equipment and the NMFS take report form.[20] Biological data, samples, and tagging must occur as outlined below. The Lessee must follow the Sturgeon and Sea Turtle Take Standard Operating Procedures.[21]

5.8.3.2.1 The Lessee must equip survey vessels with a passive integrated transponder (PIT) tag reader onboard capable of reading 134.2 kHz and 125 kHz encrypted tags (e.g., Biomark GPR Plus Handheld PIT Tag Reader), and this reader must be used to scan any captured sea turtles and sturgeon for tags. Any recorded tags must be recorded on the NMFS take reporting form[10] and reported to BOEM, BSEE, and NMFS GARFO.

5.8.3.2.2 The Lessee must take genetic samples from all captured Atlantic sturgeon (alive or dead) to allow for identification of the distinct population segment (DPS) of origin of captured individuals and the tracking of the amount of incidental take. This

[20] https://media.fisheries.noaa.gov/2021-07/Take%20Report%20Form%2007162021.pdf?null

[21] https://media.fisheries.noaa.gov/2021-11/Sturgeon-Sea-Turtle-Take-SOPs-external-11032021.pdf

sample collection must be done consistent with the Procedures for Obtaining Sturgeon Fin Clips.[22]

5.8.3.2.3 The Lessee must send fin clips to a BOEM-approved laboratory capable of performing genetic analysis and assignment to DPS of origin. The Lessee must submit the results of genetic analysis, including assigned DPS of origin, to BOEM, BSEE, and NMFS GARFO within 6 months of the sample collection.

5.8.3.2.4 The Lessee must hold and submit subsamples of all fin clips and accompanying metadata form to the Atlantic Coast Sturgeon Tissue Research Repository on a quarterly basis using the Sturgeon Genetic Sample Submission Form.[23]

5.8.3.3 The Lessee must ensure any live, uninjured animals are returned to the water as quickly as possible after completing the required handling and documentation. Live and responsive sea turtles or Atlantic sturgeon incidentally caught and retrieved in gear used in any fisheries survey must be released according to established protocols and whenever at-sea conditions are safe for those releasing the animal(s). Any unresponsive sea turtles or Atlantic sturgeon caught and retrieved in gear used in fisheries surveys must be handled and resuscitated whenever at-sea conditions are safe for those handling and resuscitating the animal(s).

5.8.3.4 To the extent allowed by sea conditions, the Lessee must give priority to the handling and resuscitation of any sea turtles or sturgeon that are captured in the gear being used. Handling times for these species must be minimized (i.e., kept to 15 minutes or less) to limit the amount of stress placed on the animals.

5.8.3.4.1 All survey vessels must have copies of the sea turtle handling and resuscitation requirements found at 50 C.F.R. § 223.206(d)(1) prior to the commencement of any on-water activity.[24] These handling and resuscitation procedures (the latter, when necessary) must be executed any time a sea turtle is incidentally captured and brought onboard a survey vessel.

---

[22] https://media.fisheries.noaa.gov/dam-migration/sturgeon_genetics_sampling_revised_june_2019.pdf

[23] https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-take-reporting-programmatics-greater-atlantic

[24] https://media.fisheries.noaa.gov/dam-migration/sea_turtle_handling_and_resuscitation_measures.pdf

5.8.3.4.2 For sea turtles that appear injured, sick, distressed, or dead (including stranded or entangled individuals), survey staff must immediately contact the Greater Atlantic Region Marine Animal Hotline at 866-755-6622 for further instructions and guidance on handling, retention, and/or disposal of the animal. If survey staff are unable to contact the hotline (e.g., due to distance from shore or lack of ability to communicate via phone), then survey staff must contact the USCG via VHF marine radio on Channel 16. If required, hard-shelled sea turtles (i.e., non-leatherbacks) may be held on board for up to 24 hours, provided conditions during holding are authorized by the NMFS GARFO PRD and safe handling practices are followed. If the hotline or an available veterinarian cannot be contacted and the injured animal cannot be taken to a rehabilitation center, activities that could further stress the animal must be stopped. When sea-to-shore contact with the hotline or an available veterinarian is not possible, the animal must be allowed to recover and be responsive before safely releasing it to the sea.

5.8.3.4.3 The Lessee must make attempts to resuscitate any Atlantic sturgeon that are unresponsive or comatose by providing a running source of water over the gills as described in the Sturgeon Resuscitation Guidelines.[25]

5.8.3.4.4 Carcasses of incidentally caught sea turtles and sturgeon must be held in cold storage (frozen is preferred, although refrigerated is permitted if a freezer is not available) until retention or disposal procedures are authorized by the NMFS GARFO PRD, which may include transfer to an appropriately permitted partner or facility on shore. Following reporting of an incidental capture, NMFS may authorize that incidentally captured dead sea turtles or Atlantic sturgeon be retained on board the survey vessel, provided that appropriate cold storage facilities are available on the survey vessel.

5.8.4 Notification Report. The Lessee must notify BOEM, BSEE, and NMFS GARFO via email within 24 hours of any interaction with a sea turtle or

[25] https://media.fisheries.noaa.gov/dam-migration-miss/Resuscitation-Cards-120513.pdf

sturgeon and include the NMFS take reporting form.[26] The report must include, at a minimum, the following: (1) survey name and applicable information (e.g., vessel name, station number); (2) Global Positioning System (GPS) coordinates describing the location of the interaction (in decimal degrees); (3) gear type involved (e.g., bottom trawl, gillnet, longline); (4) soak time, gear configuration and any other pertinent gear information; (5) time and date of the interaction; (6) identification of the animal to the species level (if possible); and (7) a photograph or video of the animal (multiple photographs are suggested, including at least one photograph of the head scutes). If reporting within 24 hours is not possible (e.g., due to distance from shore or lack of ability to communicate via phone, fax, or email), the Lessee must submit reports as soon as possible and must submit late reports with an explanation for the delay.

5.8.5 Annual Report. The Lessee must submit an annual report within 90 days of the completion of each survey season to BOEM, BSEE, USACE, and NMFS GARFO. The report must include all information on any observations of and interactions with ESA-listed species and contain information on all survey activities that took place during the season, including location of gear set, duration of soak/trawl, and total effort. The report on survey activities must be comprehensive of all activities, regardless of whether ESA-listed species were observed.

5.9 Protected Species Training and Coordination (Construction) (Operations) (Decommissioning). Before beginning any in-water activities involving vessel use, pile driving, and HRG surveys, and when new personnel join the work, the Lessee must conduct briefings for construction supervisors and crews, PSO and PAM teams, vessel operators, and all staff in order to explain responsibilities, communication procedures, and protected species mitigation, monitoring, and reporting requirements. This must occur prior to the start of all pile driving, HRG and fisheries resources surveys, and when any new personnel are involved in any of these work activities.

5.9.1 The Lessee must submit all required documents and reports related to protected species training and coordination conditions in Sections 5.9.2. and 5.9.3 to BOEM, BSEE via TIMSWeb with a notification email sent to protectedspecies@bsee.gov, NMFS's OPR at pr.itp.monitoringreports@noaa.gov, and NMFS GARFO PRD at nmfs.gar.incidental-take@noaa.gov.

5.9.2 Vessel Crew and Protected Species Observer Training Requirement. The Lessee must provide Project-specific training to all vessel crew members, PSOs, and Trained Lookouts on the identification of sea turtles and marine mammals, vessel strike avoidance and reporting protocols, how

[26] https://media.fisheries.noaa.gov/2021-07/Take%20Report%20Form%2007162021.pdf?null

and when to communicate with the vessel captain, the authority of the PSOs, and the associated regulations for avoiding vessel collisions with protected species prior to the start of in-water construction or detonation activities. The Lessee must make reference materials for identifying sea turtles and marine mammals available aboard all Project vessels. Copies of the Marine Mammal and Sea Turtle Monitoring Plan (see 5.4.8) and Vessel Strike Avoidance Plan (see 5.4.7) must be available aboard all Project vessels. Confirmation of the training and understanding of the requirements must be documented on a training course log sheet, and the Lessee must provide the log sheets to BOEM and BSEE upon request. The Lessee must communicate to all crew members its expectation for them to report sightings of sea turtles and marine mammals to the designated vessel contacts. The Lessee must communicate the process for reporting sea turtles and marine mammals (including live, entangled, and dead individuals) to the designated vessel contact and all crew members. The Lessee must post the reporting instructions, including communication channels, in highly visible locations aboard all Project vessels.

5.9.3 PSO Requirements (Construction) (Operations) (Decommissioning). The Lessee must use independent, dedicated, qualified PSOs provided by a third party. PSOs must have no Project-related tasks other than to observe, collect and report data, and communicate with and instruct relevant vessel crew regarding the presence of protected species and mitigation requirements (including brief alerts regarding maritime hazards). PSOs or any PAM operators serving as PSOs must have completed a commercial PSO training program for the Atlantic with an overall examination score of 80 percent or greater. The Lessee must use NMFS-approved PSOs and PAM operators. The Lessee must provide training certificates for individual PSOs to BOEM or BSEE upon request. PSOs and PAM operators must be approved by NMFS before the start of construction activities. Application requirements to become a NMFS-approved PSO for construction activities can be found on the NOAA website or for geological and geophysical surveys by sending an inquiry to nmfs.psoreview@noaa.gov. PSOs and PAM operators must be on watch for no more than a maximum of 4 consecutive hours, followed by a break of at least 2 hours between watches.

5.10 Vessel Strike Avoidance Conditions (Planning) (Construction) (Operations) (Decommissioning).

5.10.1 The Lessee must submit any required documents related to vessel strike avoidance plans or reporting as a result of the NMFS BiOp to BOEM, BSEE via TIMSWeb with a notification email sent to protectedspecies@bsee.gov, and NMFS GARFO PRD at nmfs.gar.incidental-take@noaa.gov.

5.10.2 Protected Species Observer Requirements. The Lessee must ensure that vessel operators and crew members maintain a vigilant watch for marine mammals and sea turtles, and reduce vessel speed, alter the vessel's course, or stop the vessel as necessary to avoid striking marine mammals or sea turtles.

5.10.2.1 All vessels must have a visual observer on board who is responsible for monitoring the vessel strike avoidance zone for marine mammals and sea turtles. Visual observers may be PSO or crew members, but crew members responsible for these duties must be provided sufficient training by the Lessee to distinguish marine mammals and sea turtles from other phenomena and must be able to identify a marine mammal as a NARW, other whale (defined in this context as sperm whales or baleen whales other than NARW), or other marine mammal, as well as identify sea turtles. Crew members serving as visual observers must not have duties other than observing for marine mammals while the vessel is operating over 10 knots.

5.10.3 Vessel Communication of Threatened and Endangered Species Sightings. The Lessee must ensure that whenever multiple Project vessels are operating, any detections of ESA-listed species (marine mammals and sea turtles) are communicated in near real time to these personnel on the other Project vessels: PSOs, vessel captains, or both.

5.10.3.1 Year-round, all vessel operators must monitor the Project's Situational Awareness System, WhaleAlert, USCG VHF Channel 16, and the Right Whale Sighting Advisory System (RWSAS) for the presence of NARWs once every 4-hour shift during Project-related activities. The PSO and PAM operator monitoring teams for all activities must also monitor these systems no less than every 12 hours. If a vessel operator is alerted to a NARW detection within the Project area, they must immediately convey this information to the PSO and PAM teams.

5.10.3.2 Any observations of any large whale by any of the Lessee's staff or contractor, including vessel crew, must be communicated immediately to PSOs and all vessel captains to increase situational awareness.

5.10.4 Vessel Strike Avoidance of Sea Turtles (Construction) (Operations) (Decommissioning).

5.10.4.1 For all vessels operating north of the Virginia/North Carolina border between June 1 and November 30, the Lessee must have a trained lookout posted on all vessel transits during all phases of the project to observe for sea turtles. The trained

lookout must communicate any sightings, in real time, to the captain so that the requirements below can be implemented.

5.10.4.2 For all vessels operating south of the Virginia/North Carolina border, year-round, the Lessee must have a trained lookout posted on all vessel transits during all phases of the project to observe for sea turtles. The trained lookout must communicate any sightings, in real time, to the captain so that the requirements below can be implemented. This requirement is in place year-round for any vessels transiting south of Virginia, as sea turtles are present year-round in those waters.

5.10.4.3 The trained lookout must monitor https://seaturtlesightings.org/ prior to each trip and report any observations of sea turtles in the vicinity of the planned transit to all vessel operators/captains and lookouts on duty that day.

5.10.4.4 The trained lookout must maintain a vigilant watch and monitor a Vessel Strike Avoidance Zone (500 meters) at all times to maintain minimum separation distances from ESA-listed species. Alternative monitoring technology (e.g., night vision, thermal cameras, etc.) must be available to ensure effective watch at night and in any other low visibility conditions. If the trained lookout is a vessel crew member, monitoring must be their designated role and primary responsibility while the vessel is transiting. Any designated crew lookouts must receive training on protected species identification, vessel strike minimization procedures, how and when to communicate with the vessel captain, and reporting requirements.

5.10.4.5 If a sea turtle is sighted within 100 meters or less of the operating vessel's forward path, the vessel operator must slow down to 4 knots (unless it is unsafe to do so) and then proceed away from the turtle at a speed of 4 knots or less until there is a separation distance of at least 100 meters, at which time the vessel may resume normal operations. If a sea turtle is sighted within 50 meters of the forward path of the operating vessel, the vessel operator must shift to neutral when safe to do so and then proceed away from the turtle at a speed of 4 knots. The vessel may resume normal operations after it has passed 100 meters from the turtle.

5.10.4.6 Vessel captains and operators must avoid transiting through areas of visible jellyfish aggregations or floating sargassum lines or mats. If operational safety prevents avoidance of such

areas, vessels must slow to 4 knots while transiting through such areas.

5.10.4.7 All vessel crew members must be briefed in the identification of sea turtles and in regulations and best practices for avoiding vessel collisions. Reference materials must be available aboard all project vessels for identification of sea turtles. The requirement and process for reporting of sea turtles (including live, entangled, and dead individuals) must be clearly communicated and posted in highly visible locations aboard all project vessels, so that there is a clear requirement for reporting to the designated vessel contact (such as the lookout or the vessel captain), as well as a communication channel and process for crew members to do so.

5.10.4.8 The only exception to the requirements regarding vessel speed and avoiding jellyfish, sargassum, and/or sea turtles is when the safety of the vessel or crew during an emergency necessitates deviation from these requirements. If any such incidents occur, they must be reported to BSEE and NMFS GARFO within 24 hours.

5.10.4.9 If a vessel is carrying a PSO or trained lookout for the purposes of maintaining watch for NARWs, an additional lookout is not required and this PSO or trained lookout must also maintain watch for sea turtles.

5.10.4.10 Vessel transits to and from the Project area that require PSOs must maintain a speed commensurate with weather conditions and effectively detecting sea turtles prior to reaching the 100 meters separation distance mentioned above, at which point the vessel must reduce speed and avoid sea turtles.

5.11 WTG and OSS Foundation Installation Conditions (Construction) (Operations). Monopiles must be no larger than 11 meters in diameter and pin piles must be no larger than 2.5-m in diameter. For all monopiles, the minimum amount of hammer energy necessary to effectively and safely install and maintain the integrity of the piles must be used. Nominal impact hammer energies must not exceed 5,500 kilojoules (kJ) for monopile installation and 3,200 kJ for pin pile installation.

5.11.1 The Lessee must submit all required documents related to WTG and OSS foundation installation conditions in Sections 5.11.2 through 5.11.5 to BOEM, BSEE via TIMSWeb with a notification email sent to protectedspecies@bsee.gov, USACE at CENAN-R-Permit-App@usace.army.mil, and NMFS GARFO PRD at nmfs.gar.incidental-take@noaa.gov.

5.11.2 Seasonal and Daily Restrictions. No foundation impact pile driving activities are allowed to occur January 1 through April 30. No more than two foundation monopiles or up to three pin piles are allowed to be installed per day. The Lessee must not conduct pile driving operations at any time when lighting or weather conditions (e.g., darkness, rain, fog, sea state) prevent visual monitoring of the full extent of the clearance and shutdown zones. The lead PSO must determine when sufficient light exists to allow effective visual monitoring in all cardinal directions. If light is insufficient, the lead PSO must call for a delay until the visual clearance zone is visible in all directions or must implement the approved Reduced Visibility Monitoring Plan/Nighttime Pile Driving Monitoring Plan (as required by the terms of the NMFS BiOp; see Appendix A Section 5.4.9). The Lessee must limit pile driving to daylight hours, only extending into night if the Lessee starts installing the pile 1.5 hours prior to civil sunset, unless the Lessee has received concurrence from NMFS, BOEM, and BSEE on the Reduced Visibility Monitoring Plan/Nighttime Pile Driving Monitoring Plan (see Section 5.4.9).

5.11.3 Noise Abatement Systems. The Lessee must employ noise abatement systems, also known as noise mitigation systems, during all impact pile driving, consistent with the requirements of NMFS Biological Opinion and the MMPA Final Rule/LOA to reduce the sound pressure levels that are transmitted through the water to reduce ranges to acoustic thresholds and minimize any acoustic impacts resulting from pile driving. The Lessee must employ a double big bubble curtain or a single bubble curtain paired with another noise abatement device during these activities. The noise abatement method used is required to attenuate pile driving noise such that measured ranges to isopleth distances of concern are consistent with those modeled based on 10 dB attenuation during impact pile driving of foundation piles. The Lessee must also adjust operational protocols to minimize noise levels.

5.11.3.1 The bubble curtain(s) must distribute air bubbles using an airflow rate of at least 0.5 meters^3/(minutes*meter). The bubble curtain(s) must surround 100 percent of the piling perimeter throughout the full depth of the water column. In the unforeseen event of a single compressor malfunction, the offshore personnel operating the bubble curtain(s) must make appropriate adjustments to the air supply and operating pressure such that the maximum possible sound attenuation performance of the bubble curtain(s) is achieved.

5.11.3.2 The lowest bubble ring must be in contact with the seabed for the full circumference of the ring, and the weights attached to the bottom ring must ensure 100-percent seabed contact.

5.11.3.3 No parts of the ring or other objects may prevent full seabed contact.

5.3.1.1 The Lessee must use qualified and experienced staff to train personnel in the proper balancing of airflow to the ring. Corrections to the bubble ring(s) to meet the performance standards must occur prior to impact pile driving of monopiles. The Lessee must maintain similar quality control measures as described here for the noise mitigation device used in addition to the double bubble curtain.

5.11.3.4 The Lessee must inspect and carry out appropriate maintenance on the noise attenuation system prior to every pile driving event and prepare and submit a Noise Attenuation System (NAS) inspection/performance report. For piles for which full SFV is carried out, this report must be submitted as soon as it is available, but no later than when the interim SFV report is submitted for the respective pile. Performance reports for all subsequent piles must be submitted with the weekly pile driving reports.

5.11.3.5 Performance reports. All reports must be submitted by email to BOEM, BSEE, and NMFS. Performance reports for each bubble curtain deployed must include water depth, current speed and direction, wind speed and direction, bubble curtain deployment/retrieval date and time, bubble curtain hose length, bubble curtain radius (distance from pile), diameter of holes and hole spacing, air supply hose length, compressor type (including rated Cubic Feet per Minute (CFM) and model number), number of operational compressors, performance data from each compressor (including Revolutions Per Minute (RPM), pressure, start times, and stop times), free air delivery (m^3/min), total hose air volume (m^3/(min m)), schematic of GPS waypoints during hose laying, maintenance procedures performed (pressure tests, inspections, flushing, re-drilling, and any other hose or system maintenance) before and after installation and timing of those tests, and the length of time the bubble curtain was on the seafloor prior to foundation installation. Additionally, the report must include any important observations regarding performance (before, during, and after pile installation), such as any observed weak areas of low pressure. The report may also include any relevant video and/or photographs of the bubble curtain(s) operating during all pile driving.

5.11.3.6 The Lessee must report any important observations regarding performance (before, during, and after installation), such as observed weak areas of low pressure supported by any relevant video and/or photographs of the bubble curtain(s) operating during all pile driving with the weekly reports specified in Section 5.13.5. For piles for which full SFV is carried out, the performance report must be submitted with the respective SFV report for the pile that the test was conducted.. Performance reports for all subsequent piles must be submitted with the weekly pile driving reports.

5.11.4 Use of PSOs and PAM Operators. The Lessee must use NMFS-approved PSOs and PAM operators before, during, and after all foundation installation activities. At minimum, four visual PSOs must be actively observing for marine mammals and sea turtles before, during, and after pile driving. At least two visual PSOs must be stationed on the pile driving vessel and at least two visual PSOs must be stationed on a secondary, PSO-dedicated vessel. The dedicated PSO vessel must be positioned near the outer edge of the modeled large whale clearance zone (2 kilometers year-round) to maximize detectability for monitoring and must adjust this distance as needed based upon on SFV results. At least one active PSO on each platform must have a minimum of 90 days at-sea experience working in those roles in offshore environments, with no more than 18 months elapsed since the conclusion of the at-sea experience. These PSOs must maintain watch at all times when impact pile driving of monopiles is underway. Concurrently, at least one PAM operator must actively monitor for vocalizing marine mammals before, during and after pile driving. Furthermore, all crew and personnel working on the Project are required to maintain situational awareness of marine mammal presence (discussed further above) and are required to report any sightings to the PSOs.

5.11.4.1 The Lessee must ensure that PSO coverage is sufficient to reliably detect marine mammals and sea turtles at the surface in the identified clearance and shutdown zones (Section 5.11.5) to execute any pile driving delays or shutdown requirements. If, at any point prior to or during construction, the PSO coverage is determined not to be sufficient to reliably detect ESA-listed marine mammals and sea turtles within the clearance and shutdown zones, additional PSOs and/or platforms must be deployed. Determinations prior to construction must be based on review of the Marine Mammal and Sea Turtle Monitoring Plan for Pile Driving (Section 5.4.8). Determinations during construction must be based on review of the weekly reports and other information, as appropriate.

5.11.4.2 The Lessee must ensure that, if the clearance and/or shutdown zones are expanded due to the verification of sound fields from pile driving, PSO coverage is sufficient to reliably monitor the expanded clearance and/or shutdown zones. Additional observers must be deployed on additional platforms for every 1,500 meters that a marine mammal clearance or shutdown zone is expanded beyond the initial clearance and shutdown zones (Table 5.11.5; Section 5.11.5). In the event that the clearance or shutdown zone for sea turtles needs to be expanded, the Lessee must submit a proposed monitoring plan for the expanded zones to NMFS GARFO for approval.

5.11.5 Clearance and Shutdown Zones (Construction). The Lessee must use visual PSOs and PAM operators to monitor the area around each foundation pile before, during and after pile driving. The clearance and shutdown zones are defined in the table below. The clearance procedures

cannot begin until the lead PSO has determined that there is minimum visibility as required in the MMPA LOA.

Table 5.11.5. Clearance and shutdown zones for impact pile driving of foundation piles.

Species	Clearance Zone (m)	Shutdown Zone (m)
North Atlantic right whale (visual detection)	Any visual distance the species is observed	Any visual distance the species is observed
North Atlantic right whale (PAM detection)	5,000	1,500
All non-NARW mysticetes and sperm whales (visual and PAM	2,000	1,500
Harbor porpoise (visual and PAM detection)	400	400
Dolphins and pilot whales (visual and PAM detection)	200	200
Seals (visual detection)	200	200
Sea Turtles (visual detection)	500	500

Notes: The required minimum visibility zone for protected species monitoring to occur for all WTG and OSS foundation is 1,500 m.

5.11.5.1 Clearance or Shutdown Zone Adjustment After Sound Field Verification. The Lessee must conduct SFV consistent with an approved SFV Plan. If any of the SFV measurements indicate that the distances to level A thresholds for ESA listed whales or PTS peak or cumulative thresholds for sea

turtles are larger than the modeled distances (assuming 10 dB attenuation, per thresholds in the September 8, 2023, BiOp for the project in Tables 7.1.12, 7.13, 7.1.14, 7.1.22, 7.1.23. 7.1.28), the clearance and shutdown zones (Table 5.10.5) for subsequent piles must be increased so that they are at least the size of the distances to those thresholds as indicated by SFV (e.g., if threshold distances are exceeded on pile 1 then the clearance and shutdown zones for pile 2 must be expanded). As noted in NMFS BiOp, when these tables reference exposure ranges, SFV results will be compared to the appropriate corresponding distances calculated for acoustic ranges as reported in the Project's acoustic modeling report (Küsel et al. 2022). BOEM and BSEE, after consultation with NMFS OPR and NMFS GARFO, may approve the Lessee's request for reductions in the shutdown zones based upon SFV of a minimum of three piles; however, the shutdown zone must not be reduced to less than 1,000 meters for large whales, or 500 meters for sea turtles. No reductions in the clearance or shutdown zones for NARWs will be considered regardless of the results of SFV.

5.11.5.2 If any interim SFV report submitted for the first 3 monopiles, as required in 5.13.4, indicate the sound fields exceed the modeled distances to protected species injury and behavioral harassment thresholds (assuming 10 dB attenuation), then the Lessee must implement both required additional sound attenuation measures and adjustments to clearance and shutdown zones as described in 5.10.3 and in a above, respectively.

5.11.5.3 Pile Driving Clearance Zones for Marine Mammals and Sea Turtles. The Lessee must establish and implement clearance (all distances to the perimeter are the radii (Table 5.10.5) from the center of the pile being driven) as described above for all WTG and OSS foundation installation. The Lessee must use visual PSOs and PAM operators to monitor the area around each foundation pile before, during, and after pile driving. PSOs must visually monitor clearance zones for marine mammals and sea turtles for a minimum of 60 minutes prior to commencing pile driving. Acoustic PSOs (at least one PAM operator) must review data from at least 24 hours prior to pile driving and actively monitor hydrophones for 60 minutes prior to pile driving. Prior to initiating soft-start procedures, the entire minimum visibility zone must be visible (i.e., not obscured by dark, rain, fog, etc.), and all clearance zones must be confirmed to be free of

marine mammals and sea turtles for 30 minutes immediately prior to starting a soft-start of pile driving. Clearance zones extending beyond the minimum visibility zone may be cleared using either visual or acoustic methods. If a marine mammal or sea turtle is observed entering or within the relevant clearance zone prior to the initiation of impact pile driving activities, pile driving must be delayed and must not begin until either the marine mammal(s) or sea turtle(s) has voluntarily left the specific clearance zones and has been visually or acoustically confirmed beyond that clearance zone, or, when specific time periods have elapsed with no further sightings or acoustic detections have occurred (i.e., 15 minutes for small odontocetes and 30 minutes for all other marine mammal species and sea turtles). The clearance zone may be declared clear only if no confirmed NARW acoustic or visual detections have occurred during the 60-minute monitoring period. Any large whale sighting by a PSO or detected by a PAM operator that cannot be identified as a non-NARW must be treated as if it were a NARW.

5.11.5.4 Pile Driving Shutdown for Marine Mammals and Sea Turtles. If a marine mammal or sea turtle is observed entering or within the respective shutdown zone (as defined above) and impact pile driving has begun, the PSO must call for a temporary cessation of impact pile driving. The Lessee must immediately cease pile driving upon orders of the PSO unless shutdown is not practicable due to imminent risk of injury or loss of life to an individual due to pile refusal or pile instability. In this situation, reduced hammer energy must be implemented instead, as determined to be practicable.

5.11.5.4.1 The Lessee must file a report with BSEE and NMFS GARFO in the event that any ESA-listed species is observed within the identified shutdown zone during active pile driving. This report must be filed within 48 hours of the incident and include the following: duration of pile driving prior to the detection of the animal, location of PSOs and any factors that impaired visibility or detection ability, time of detection of the animal, time the PSO called for shutdown, time the pile driving was stopped, and any measures implemented (e.g., reduced hammer energy) prior to shutdown. The report must also include the time that the animal was last detected

and any PSO reports on the behavior of the animal. If shutdown was determined not to be feasible, the report must include an explanation for that determination and the measures that were implemented (e.g., reduced hammer energy).

5.11.5.5 Pile Driving Restart Procedures for Marine Mammal or Sea Turtle Detections. Pile driving must not restart until either the marine mammal(s) or sea turtle(s) has voluntarily left the specific clearance zones and has been visually or acoustically confirmed beyond that clearance zone, or, when specific time periods have elapsed during which no further sightings or acoustic detections have occurred. The specific time periods are 15 minutes for small odontocetes and 30 minutes for all other marine mammal species and sea turtles. In cases where these criteria are not met, pile driving may restart only if necessary to maintain pile stability at which time the lowest hammer energy must be used to maintain stability. If impact pile driving has been shut down due to the presence of a NARW, pile driving may not restart until the NARW is no longer observed or 30 minutes has elapsed since the last detection. Upon re-starting pile driving, soft start protocols must be followed.

5.11.5.6 Soft Start for Pile Driving. The Lessee must use a soft start protocol for impact pile driving of monopiles by performing 4–6 strikes per minute at 10 to 20 percent of the maximum hammer energy, for a minimum of 20 minutes. Soft start must be used at the beginning of each day's monopile installation, and at any time following a cessation of impact pile driving of 30 minutes or longer. If a marine mammal or sea turtle is detected within or about to enter the applicable clearance zones, prior to the beginning of soft-start procedures, impact pile driving must be delayed until the animal has been visually observed exiting the clearance zone or until a specific time period has elapsed with no further sightings (i.e., 15 minutes for small odontocetes and 30 minutes for all other marine mammal species and sea turtles).

5.12 HRG Survey Conditions for Marine Mammals and Sea Turtles (Planning) (Construction) (Operations) (Decommissioning).

5.12.1 The Lessee must submit all required documents related to HRG survey conditions in 5.12.2 through 5.12.8 to BOEM, to BSEE via TIMSWeb with a notification email sent to protectedspecies@bsee.gov, and to NMFS GARFO PRD at nmfs.gar.incidental-take@noaa.gov.

5.12.2 Use of PSOs. The Lessee must employ qualified NMFS-approved PSOs during HRG surveys related to the Project. One PSO must monitor during daylight hours and two must monitor during nighttime hours, per vessel. Between four and six PSOs must be present on every 24-hour survey vessel, and two to three PSOs must be present on every 12-hour survey vessel. At least one PSO must be on active duty during HRG surveys conducted during daylight, and at least two PSOs must be on activity duty during HRG surveys conducted at night. Any PSO must have the authority to call for a delay or shutdown of survey activities. PSOs must begin visually monitoring 30 minutes prior to the initiation of the specified acoustic source (i.e., ramp-up, if applicable) through 30 minutes after the use of the specified acoustic source has ceased. Any observations of marine mammals must be communicated to PSOs on all nearby survey vessels during concurrent HRG surveys. PSOs must establish and monitor the clearance and shutdown zones described below. These zones must be based on the radial distance from the acoustic source and not from the vessel.

5.12.3 HRG Clearance Procedures. The Lessee must implement a 30-minute clearance period of the clearance zones immediately prior to the commencing of the survey or when there is more than a 30-minute break in survey activities and PSOs are not actively monitoring. The clearance and shutdown zones prescribed by the Incidental Take Authorization must be followed for all marine mammals. The clearance zone and shutdown zone for all sea turtles is 100 meters. The clearance zones must be monitored by PSOs, using the appropriate visual technology. If a marine mammal or sea turtle is observed within a clearance zone during the clearance period, ramp-up must not begin until the animal(s) has been observed voluntarily exiting its respective clearance zone or until additional time has elapsed with no further sighting (i.e., 15 minutes for small odontocetes and seals and 30 minutes for all other marine mammal species and sea turtles). In any case when the clearance process has begun in conditions with good visibility, including via the use of night vision equipment (infrared [IR]/thermal camera), and the Lead PSO has determined that the clearance zones are clear of marine mammals, survey operations may commence (i.e., no delay is required) for periods of inclement weather and/or loss of daylight.

5.12.4 During periods of low visibility (e.g., darkness, rain, fog, etc.), PSOs must use alternative technology (i.e., IR/thermal camera) to monitor the clearance and shutdown zones.

5.12.5 HRG Shutdown Procedures. After the survey has commenced, the Lessee must shut down boomers, sparkers, and compressed high-intensity radiated pulses (CHIRPs) if a marine mammal or sea turtle enters a respective shutdown zone. In cases when the shutdown zones become obscured for brief periods due to inclement weather, survey operations

may continue (i.e., no shutdown is required) so long as no marine mammals or sea turtles have been detected. The use of boomers, and sparkers, and CHIRPS must not commence or resume until the animal(s) has been confirmed to have left the Level B harassment zone or until a full 15 minutes (for small odontocetes and seals) or 30 minutes (for all other marine mammals and sea turtles) have elapsed with no further sighting. Any large whale sighted by a PSO within 1,000 meters of the boomers, sparkers, and CHIRPs that cannot be identified as a non-NARW must be treated as if it were a NARW.

Shutdown zones are defined as a 500-meter zone for the NARW or a 100-meter zone for all other marine mammal species (with exception of specific delphinid species). The shutdown requirement is waived for small delphinids of the following genera: *Delphinus*, *Stenella*, *Lagenorhynchus*, and *Tursiops*. Specifically, if a delphinid from the specified genera is visually detected approaching the vessel (i.e., to bow-ride) or towed equipment, shutdown will not be required. If there is uncertainty regarding identification of a marine mammal species (i.e., whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), the PSOs must use their best professional judgment in making the decision to call for a shutdown. Additionally, shutdown is required if a delphinid that belongs to a genus other than those specified is detected in the shutdown zone. During periods of low visibility (e.g., darkness, rain, fog), PSOs must use alternative technology (i.e., IR/thermal camera) to monitor the clearance and shutdown zones.

5.12.6 Ramp-Up Procedures. At the start or restart of the use of boomers, sparkers, and/or CHIRPs, a ramp-up procedure (i.e., gradual increase in source level output) must be followed unless the equipment operates on a binary on/off switch. Operators must ramp up sources to half power for 5 minutes and then proceed to full power. Prior to starting a ramp-up procedure, the operator must notify a PSO of the planned start of the ramp-up. This notification time must not be less than 60 minutes prior to the planned ramp-up activities, as all relevant PSOs must use the appropriate 30-minute period to monitor prior to the initiation of ramp-up. Prior to starting ramp-up, visual clearance zones must be fully visible (e.g., not obscured by darkness, rain, fog, etc.), and the operator must receive confirmation from the PSO that the clearance zone is clear of any marine mammals and sea turtles. All ramp-ups must be scheduled to minimize the overall time spent with the source being activated. The ramp-up procedure must be used at the beginning of construction survey activities or after more than a 30-minute break in survey activities using the specified HRG equipment to provide additional protection to marine mammals and sea turtles in or near the survey area by allowing them to vacate the area prior to operation of survey equipment at full power.

5.12.6.1 The Lessee must not initiate ramp-up until the clearance process has been completed (see Section 5.10.3). Ramp-up activities must be delayed if a marine mammal(s) enters its respective shutdown zone. Ramp-up may be reinitiated only if the animal(s) has been observed exiting its respective shutdown zone or until additional time has elapsed with no further sighting (i.e., 15 minutes for small odontocetes and seals, and 30 minutes for all other marine mammal species and sea turtles).

5.12.6.2 HRG Restart Procedures. If a boomer, sparker, or CHIRP is shut down for reasons other than mitigation (e.g., mechanical difficulty) for less than 30 minutes, it may be activated again without ramp-up only if (1) PSOs have maintained constant observation and (2) no additional detections of any marine mammal or sea turtles occurred within the respective shutdown zones. If a boomer, sparker, or CHIRP was shut down for a period longer than 30 minutes, then all clearance and ramp-up procedures must be initiated.

5.12.7 The Lessee must deactivate acoustic sources during periods when no data are being collected, except as determined to be necessary for testing. Any unnecessary use of the acoustic source(s) must be avoided.

5.12.8 During daylight hours when survey equipment is not operating, the Lessee must ensure that visual PSOs conduct, as rotation schedules allow, observations for comparison of sighting rates and behavior with and without use of the specified acoustic sources. Off-effort PSO monitoring must be reflected in the monthly PSO monitoring reports.

5.12.9 The Lessee must comply with all the Project Design Criteria and Best Management Practices for Protected Species at https://www.boem.gov/sites/default/files/documents//PDCs%20and%20BMPs%20for%20Atlantic%20Data%20Collection%2011222021.pdf and the June 29, 2021, programmatic consultation under the ESA, revised September 22, 2021.

5.12.9.1 The lessee must comply with PDC 6: Minimize Risk During Buoy Deployment, Operations, and Retrieval for any surface expressing buoys that may be deployed by the project, including surface marking and anchor retrieval buoys.

5.13 Reporting (Planning) (Construction) (Operations) (Decommissioning).

5.13.1 Reporting of All NARW Detections.

5.13.1.1 If a NARW is observed at any time by PSOs or personnel on any project vessels or during any project-related activity (including during vessel transit), the Lessee must immediately report sighting information to BOEM, BSEE, the NMFS hotline

5.13.1.1.1 If in the Greater Atlantic Region (ME to VA/NC border) call (866-755-6622).

5.13.1.1.2 If in the Southeast Region (NC to FL) call (877-WHALE-HELP or 877-942-5343).

5.13.1.1.3 If calling the hotline is not possible, reports can also be made to the U.S. Coast Guard via channel 16 or through the WhaleAlert app (http://www.whalealert.org/).

The Lessee must include in its report the time, date, location, and number of animals sighted, animal description/certainty of species identification, animal behavior, animal closest point of approach, project activities at time of detection, vessel speed, and any mitigation measures implemented. The Lessee must report the PSO/personnel name, PSO provider (if applicable), and reporter's contact information. Any collected photos and/or videos must be submitted.

5.13.1.2 If a NARW is detected at any time via PAM, the Lessee must ensure the detection is reported as soon as possible and no longer than 24 hours after the detection to NMFS via the 24-hour North Atlantic right whale Detection Template (https://www.fisheries.noaa.gov/resource/document/passiveacoustic-reporting-system-templates). Calling the hotline is not necessary when reporting PAM detections via the template.

5.13.1.3 The Lessee must send a summary report within 24 hours to NMFS GARFO (nmfs.gar.incidental-take@noaa.gov) and NMFS OPR (PR.ITP.MonitoringReports@noaa.gov) with the information submitted to the hotline/template and confirmation the sighting/detection was reported to the respective hotline, the vessel/platform from which the sighting/detection was made, activity the vessel/platform was engaged in at time of sighting/detection, project construction and/or survey activity ongoing at time of sighting/detection (e.g., pile driving, cable installation, HRG survey), distance from vessel/platform to animal at time of initial sighting/detection, closest point of approach of whale to vessel/platform, vessel speed, and any mitigation actions taken in response to the sighting.

5.13.2 Reporting of ESA-Listed Species within Shutdown Zone During Active Pile Driving. In the event that any ESA-listed species is observed within the identified shutdown zone during active pile driving, the Lessee must file a report with BOEM, BSEE, and NMFS GARFO within 48 hours of the incident and include the following: duration of pile driving prior to the detection of the animal, location of PSOs and any factors that impaired visibility or detection ability, time of first and last detection of the animal, distance of animal at first detection, closest point of approach of animal to the pile, time the PSO called for shutdown, hammer log, time the pile driving began and stopped, and any measures implemented (e.g., reduced hammer energy) prior to shutdown. The Lessee must include in its report the time that the animal was last detected and any PSO reports on the behavior of the animal. If shutdown was determined not to be feasible, the Lessee report must include an explanation for that determination and the measures that were implemented (e.g., reduced hammer energy).

5.13.3 Detected or Impacted Protected Species Reporting. The Lessee must report within 24 hours all observations or collections of injured or dead whales, sea turtles, or sturgeon to BSEE and NMFS GARFO. The Lessee must ensure its reports reference the Project and include the Take Report Form available on NMFS webpage (https://media.fisheries.noaa.gov/2021-07/Take%20Report%20Form%2007162021.pdf?null). The Lessee must ensure reports of Atlantic sturgeon take include a statement as to whether a fin clip sample for genetic sampling was taken. Fin clip samples are required in all cases with the only exception being when additional handling of the sturgeon may result in an imminent risk of injury to the fish or the PSO. Incidents falling within the exception are expected to be limited to capture and handling of sturgeon in extreme weather. Instructions for fin clips and associated metadata are available at https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-take-reporting-programmatics-greater-atlantic under the "Sturgeon Genetics Sampling" heading.

The Lessee must report any suspected or confirmed vessel strike of any protected species by any project vessel in any location, including observation of any injured sea turtle or sturgeon, or sea turtle or sturgeon parts, to BOEM, BSEE, NMFS GARFO, and to appropriate NOAA stranding hotline (for marine mammals between Maine-Virginia, report to 866-755-6622, and from North Carolina-Florida to 877-942-5343 and for sea turtles from Maine-Virginia, report to 866-755-6622, and from North Carolina-Florida to 844-732-8785) as soon as feasible. The Lessee must include in the report the following information: (1) Time, date, and location (coordinates) of the incident; (2) Species identification (if known) or description of the animal(s) involved (i.e., identifiable features including animal color, presence of dorsal fin, body shape and size); (3)

Vessel strike reporter information (name, affiliation, email for person completing the report); (4) Vessel strike witness (if different than reporter) information (name, affiliation, phone number, platform for person witnessing the event); (5) Vessel name and/or MMSI number; (6) Vessel size and motor configuration (inboard, outboard, jet propulsion); (7) Vessel's speed leading up to and during the incident; (8) Vessel's course/heading and what operations were being conducted (if applicable); (9) Part of vessel that struck whale (if known); (10) Vessel damage notes; (11) Status of all sound sources in use; (12) If animal was seen before strike event; (13) behavior of animal before strike event; (14) Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike; (15) Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike; (16) Estimated (or actual, if known) size and length of animal that was struck; (Q) Description of the behavior of the marine mammal immediately preceding and following the strike; (17) If available, description of the presence and behavior of any other marine mammals immediately preceding the strike; (18) Other animal details if known (e.g., length, sex, age class); (19) Behavior or estimated fate of the animal post-strike (e.g., dead, injured but alive, injured and moving, external visible wounds (linear wounds, propeller wounds, non-cutting blunt-force trauma wounds), blood or tissue observed in the water, status unknown, disappeared); (20) To the extent practicable, photographs or video footage of the animal(s); and (21) Any additional notes the witness may have from the interaction., to the extent practicable.

In the event that an injured or dead marine mammal or sea turtle is sighted, the Lessee must report the incident to BOEM, BSEE, NMFS GARFO, and the appropriate hotline (options above), as soon as feasible, but no later than 24 hours from the sighting. The Lessee must include in the report the following information: (1) time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable); (2) species identification (if known) or description of the animal(s) involved; (3) condition of the animal(s) (including carcass condition if the animal is dead); (4) observed behaviors of the animal(s), if alive; (5) photographs or video footage of the animal(s), if available; and (6) general circumstances under which the animal was discovered. The Lessee must follow any instructions provided by staff responding to the hotline call for handling or disposing of any injured or dead animals, which may include coordination of transport to shore, particularly for injured sea turtles.

5.13.3.1 Detected or Impacted Dead Non-ESA-Listed Fish. The Lessee must report any occurrence of at least 10 dead non-ESA-listed fish within established shutdown or monitoring zones to BOEM and to BSEE via email to protectedspecies@bsee.gov as

soon as practicable (taking into account crew and vessel safety), but no later than 24 hours after the sighting. BOEM or BSEE will notify NMFS GARFO HESD via NMFS.GAR.HESDoffshorewind@noaa.gov. The Lessee must confirm the relevant point of contact prior to reporting and confirm the reporting was received.

5.13.4 SFV Reporting. The Lessee must submit all SFV reports to BOEM; BSEE via TIMSWeb with a notification email sent to BSEE at protectedspecies@bsee.gov; NMFS GARFO PRD at nmfs.gar.incidental-take@noaa.gov; and NMFS's OPR at pr.itp.monitoringreports@noaa.gov.

5.13.4.1 SFV Interim Reports for Pile Driving. The Lessee must provide, as soon as they are available but no later than 48 hours after the installation of each of the first three monopiles and after the installation of the first full pin pile OSS foundation, the initial results of the SFV measurements in an interim report to BOEM, BSEE, and NMFS GARFO. If technical or other issues prevent submission within 48 hours, the Lessee must notify NMFS GARFO within that 48-hour period with the reasons for delay and provide an anticipated schedule for submission of the report. This report is required for each of the first three monopiles installed, the first pin pile OSS foundation, and any additional piles for which SFV is required. The interim report must include data from hydrophones identified for interim reporting in the SFV Plan and include a summary of pile installation activities (pile diameter, pile weight, pile length, water depth, sediment type, hammer type, total strikes, total installation time [start time, end time], duration of pile driving, max single strike energy, NAS deployments), pile location, recorder locations, modeled and measured distances to thresholds, received levels (rms, peak, and SEL) results from Conductivity, Temperature, and Depth (CTD) casts/sound speed profiles, signal and kurtosis rise times, pile driving plots, activity logs, and weather conditions. Additionally, any important sound attenuation device malfunctions (suspected or definite) must be summarized and substantiated with data (e.g. photos, positions, environmental data, directions, etc.) and observations. Such malfunctions include gaps in the bubble curtain, significant drifting of the bubble curtain, and any other issues which may indicate sub-optimal mitigation performance or are used by Empire Wind to explain performance issues.

5.13.4.2 SFV Final Reports. The final results of SFV for monopile installations must be submitted as soon as possible, but no later than within 90 days following completion of pile driving of the three or more monopiles for which SFV was carried out. The

final results of SFV monitoring for pile driving must include results for all hydrophones.

5.13.5 Weekly Reports. The Lessee must compile and submit weekly reports during pile driving that document the start and stop of all pile driving, HRG survey, including associated PSO, SFV, and noise abatement activities. These weekly reports must be submitted to NMFS GARFO PRD (nmfs.gar.incidental-take@noaa.gov), NMFS OPR (PR.ITP.MonitoringReports@noaa.gov), BOEM, and BSEE (protectedspecies@bsee.gov) directly from the PSO providers and may consist of raw data. Weekly reports must be submitted no later than Wednesday for the previous week (Sunday – Saturday). Weekly reports must include:

5.13.5.1 Summaries of pile driving activities and piles installed, including: pile ID, type of pile, pile diameter, start and stop times for each pile driving event, pile locations, hammer log (number of strikes, max hammer energy, duration of piling) per pile, any changes to noise attenuation systems and/or hammer schedule, details on the deployment of PSOs and PAM operators, including the start and stop time of associated observation periods by the PSOs and PAM Operators, and a record of all observations/detections of marine mammals and sea turtles including time (UTC) of sighting/detection, species ID, behavior, distance (meters) from vessel to animal at time of sighting/detection (meters), animal distance (meters) from pile installation vessel, vessel/project activity at time of sighting/detection, platform/vessel name, and mitigation measures taken (if any) and reason. Sightings/detections during pile driving activities (clearance, active pile driving, post-pile driving) and all other (transit, opportunistic, etc.) sightings/detection must be reported and identified as such.

5.13.5.2 A summary of SFV and NAS implemented with pile driving;

5.13.5.3 Summaries of HRG survey activities;

5.13.5.4 Vessel operations (including port departures, number of vessels, type of vessel(s), and route);

5.13.5.5 All protected species detections (including species identification, number of animals, time at initial detection, time at final detection, distance to pile at initial detection, closest point of approach to pile, animal direction of travel

relative to pile; description of animal behavior, features used to identify species, and for moving vessels: speed (knots), distance and bearing to animal at initial detection, closest point of approach and bearing to animal, distance and bearing to animal at final detection, and animal direction of travel relative to vessel);

5.13.5.6 Vessel strike avoidance measures taken; and

5.13.5.7 Any equipment shutdowns or takes that may have occurred.

5.13.6 Monthly Reports. Starting the first month that in-water activities occur on the OCS, the Lessee must compile and submit monthly reports that include a summary of all project activities carried out in the previous month, including dates and locations of any fisheries surveys carried out, vessel transits (name, type of vessel, number of transits, vessel activity, and route (origin and destination inclusive of all ports, foreign and domestic), number of), piles installed and pile IDs, HRG surveys conducted,and all observations of ESA-listed whales, sea turtles, and sturgeon inclusive of any mitigation measures taken as a result of those observations. Sightings/detections must include species ID, time, date, initial detection distance, vessel/platform name, vessel activity, vessel speed, bearing to animal, project activity, and if any, mitigation measures taken. These reports must be submitted to BOEM, BSEE, NMFS GARFO, and NMFS OPR no later than the 15th of the month for the previous month.

5.13.6.1 Reporting Instructions for Monthly PSO Pile Driving Monitoring Reports. PSOs must collect data consistent with standard reporting forms, software tools, or electronic data forms authorized by BOEM for the particular activity. PSOs must fill out report forms for each vessel with PSOs aboard. Unfilled cells must be left empty and must not contain "NA." The reports must be submitted in Microsoft Word and Excel formats (not as a PDF). Enter all dates as YYYY-MM-DD. Enter all times in 24 Hour Coordinated Universal Time (UTC) as HH:MM.

Create a new entry on the Effort form each time a pile segment changes or weather conditions change, and at least once an hour as a minimum. Review and revise all forms for completeness and resolve incomplete data fields before submittal. The file name must follow this format: Lease#_ ProjectName_PSOData_YearMonthDaytoYearMonthDay.xls. Data fields must be reported in Excel format. Data categories must include Project, Operations, Monitoring Effort, and Detection, as further specified below. All PSO data must be generated through software applications or otherwise recorded electronically by PSOs and provided to BOEM and BSEE in electronic format (CSV files or similar format) and be checked for quality

assurance and quality control. Applications developed to record PSO data are encouraged if the data fields listed below can be recorded and exported into Excel. Alternatively, BOEM has developed an Excel spreadsheet, with all the necessary data fields, that is available upon request.

Required data fields include:

Project Information:

- Project name
- Lease number
- State coastal zones
- PSO contractors
- Vessel names
- Reporting dates (YYYY-MM-DD)
- Visual monitoring equipment used (e.g., bionics, magnification, IR cameras)
- Distance finding method used
- PSO names (Last, First) and training
- Observation height above sea surface

Operations Information:

- Date (YYYY-MM-DD)
- Hammer type used (make and model)
- Greatest hammer power used for each pile
- Pile identifier and pile number for the day (e.g., pile 2 of 3 for the day)
- Pile diameters
- Pile length
- Pile locations (latitude and longitude)
- Number of vessel transits
- Types of vessels used
- Vessel routes used

Monitoring Effort Information:

- Date (YYYY-MM-DD)
- Noise source (ON=Hammer On; OFF=Hammer Off)
- PSO name(s) (Last, First)
- If visual, how many PSOs on watch at one time?
- Time pre-clearance visual monitoring began in UTC (HH:MM)
- Time pre-clearance monitoring ended in UTC (HH:MM)
- Time pre-clearance PAM monitoring began in UTC (HH:MM)
- Time PAM monitoring ended in UTC (HH:MM)
- Duration of pre-clearance PAM and visual monitoring
- Time power-up or ramp-up began

- Time equipment full power was reached
- Duration of power-up or ramp-up
- Time pile driving began (hammer on)
- Time pile driving activity ended (hammer off)
- Duration of activity
- Duration of visual detection
- Wind speed (knots), from direction
- Swell height (meters)
- Water depth (meters)
- Visibility (kilometers)
- Glare severity
- Latitude (decimal degrees), longitude (decimal degrees)
- Compass heading of vessel (degrees)
- Beaufort scale
- Precipitation
- Cloud coverage (%)
- Did a shutdown/power-down occur?
- Time shutdown was called for (UTC)
- Time equipment was shut down (UTC)
- Habitat or prey observations
- Marine debris sighted

Detection Information:

- Date (YYYY-MM-DD)
- Sighting ID (V01, V02, or sequential sighting number for that day; multiple sightings of the same animal or group must use the same ID)
- Date and time at first detection in UTC (YY-MM- DDT HH:MM)
- Time at last detection in UTC (YY-MM-DDT HH:MM)
- PSO name(s) (Last, First)
- Effort (ON=Hammer On; OFF=Hammer Off)
- If visual, how many PSOs on watch at one time?
- Start time of observations
- End time of observations
- Duration of visual observation
- Wind speed (knots), from direction
- Swell height (meters)
- Water depth (meters)
- Visibility (kilometers)
- Glare severity
- Latitude (decimal degrees), longitude (decimal degrees)
- Compass heading of vessel (degrees)
- Beaufort scale

- Precipitation
- Cloud coverage (%)
- Sightings including common name, scientific name, or family
- Percent certainty of identification
- Number of adults
- Number of juveniles
- Total number of animals
- Bearing to animals when first detected (ship heading + clock face)
- Bearing to animals at closest approach (ship heading+ clock face)
- Bearing to animal at final detection (ship heading+ clock face)
- Range from vessel and pile (reticle distance in meters)
- Description (include features such as overall size; shape of head; color and pattern; size, shape, and position of dorsal fin; height, direction, and shape of blow, etc.)
- Detection narrative (note behavior, especially changes in relation to activity and distance from service vessel)
- Direction of animal travel in first approach relative to vessel and pile
- Behaviors observed: indicate behaviors and behavioral changes observed in sequential order (use behavioral codes)
- If any bow-riding behavior observed, record total duration during detection (UTC HH:MM)
- Initial heading of animals (degrees)
- Final heading of animals (degrees)
- Shutdown zone size during detection (meters)
- Was the animal inside the shutdown zone?
- Closest distance to vessel and pile (reticle distance in meters)
- Time at closest approach to vessel and pile (UTC HH:MM)
- Time animal entered shutdown zone (UTC HH:MM)
- Time animal left shutdown zone (UTC HH:MM)
- If observed or detected during ramp-up or power-up: first distance (reticle distance in meters), closest distance (reticle distance in meters), last distance (reticle distance in meters), behavior at final detection
- Did a shutdown/power-down occur?
- Time shutdown was called for (UTC HH:MM)
- Time equipment was shut down (UTC HH:MM)
- Detections with PAM

5.13.7 Annual Reports. Beginning one calendar year after the completion of commissioning activities, the Lessee must compile and submit annual reports that include a summary of all Project activities carried out in the previous year, including vessel transits (number, type of vessel, ports used, and route), repair and maintenance activities, survey activity, and all observations of ESA-listed species. The annual reports must be submitted to BOEM, BSEE, USACE, and NMFS GARFO. The Lessee must submit these reports by April 1 of each year for the previous

calendar year (i.e., the 2026 report is due by April 1, 2027). Upon mutual agreement of NMFS GARFO, BOEM, and BSEE, the frequency of reports can be changed.

5.13.8 Other Protected Species Conditions. On September 8, 2023, NMFS issued a BiOp, including an ITS for the Project. The ITS includes reasonable and prudent measures and terms and conditions that NMFS determined were necessary and appropriate to minimize and monitor the amount or extent of incidental take of species listed as endangered or threatened under the ESA and under NMFS jurisdiction. In order for the ESA exemption from prohibited take provided by the NMFS September 8, 2023, BiOp to be valid, the Lessee must carry out the proposed action in compliance with all avoidance and minimization measures incorporated into the proposed action considered in that consultation and comply with all reasonable and prudent measures and implementing terms and conditions included in the BiOp's ITS that are incorporated by reference in this document.

6. CONDITIONS RELATED TO COMMERCIAL FISHERIES, FOR-HIRE AND RECREATIONAL FISHING

6.1. Fisheries Compensation and Mitigation Funds (Planning) (Construction) (Operations)(Decommissioning). No later than 1 year after the approval of the COP, unless a different schedule is agreed to as a component of a separate agreement, the Lessee must implement their direct compensation program as determined in Section 6.1.1 below and augment the program to include reserve funding for shoreside support service revenue loss directly related to the Project, as determined in Section 6.1.2 below. Calculation steps are shown in Section 6.1.5 below.

6.1.1. The Lessee shall establish a compensation/mitigation fund (Fund) consistent with BOEM's draft Guidance for Mitigating Impacts to Commercial and Recreational Fisheries on the Outer Continental Shelf Pursuant to 30 C.F.R. part 585 (Guidance) to compensate commercial and for-hire recreational fishermen for loss of income due to unrecovered economic activity resulting from displacement from fishing grounds due to project construction and operations and to shoreside businesses for losses indirectly related to the Project. For losses to commercial and for-hire recreational fishermen, the Fund shall be based on the revenue exposure for fisheries based out of ports listed in the Empire Wind FEIS, Table 3.9-10 (Annual Average Commercial Fishing Landings and Revenue by Fishing Port in the EW1 WEA, EW2 WEA, and Lease Area, 2008 – 2021). For losses to shoreside businesses, the Lessee shall analyze the impacts to shoreside seafood businesses adjacent to ports listed in FEIS Table 3.9-10. Shoreside business impacts may include (but are not limited to): 1) Fishing gear suppliers and repair services; 2) Vessel fuel and maintenance services; 3) Ice and bait suppliers; 4) Seafood processors and dealers; and 5) Wholesale distributors.

6.1.2. The Lessee is required to provide BOEM their analysis (including any model outputs, such as an IMPLAN model or other economic report) verifying the exposed impacts to shoreside businesses and services. The Lessee must submit to BOEM a report that includes (1) a description of the structure of the Fund and its consistency with BOEM's draft Guidance and (2) an analysis of the impacts of the Project on shoreside businesses, for a 45-day review and comment period at least 90 days prior to establishment of the Fund. The Lessee must resolve all comments on the report to BOEM's satisfaction before implementation of the Fund. The Lessee must then submit to BOEM evidence of the implementation of the Fund, including: 1) A description of any implementation details not covered in the report to BOEM regarding the mechanism established to compensate for losses to commercial and for-hire recreational fishermen and related shoreside businesses resulting from all phases of the project development on the Lease Area (pre-

construction, construction, operation, and decommissioning); 2) the Fund charter, including the governance structure, audit and public reporting procedures, and standards for paying compensatory mitigation for impacts to fishers and related shoreside businesses from lease area development; and 3) Documentation regarding the funding account, including the dollar amount, establishment date, financial institution, and owner of the account. The Lessee shall make publicly available on an annual basis the number of claims and number of settlements pursuant to this measure and for gear loss claims.

6.1.3. Direct Compensation Program. The Lessee must ensure that the Direct Compensation Fund includes a reserve amount to be used to pay claims brought by both commercial and for-hire fishermen and must be based, at a minimum, on the annual average commercial fisheries landings values and for-hire fishing revenue stated in Tables 3.9-12 and 3.9-20, respectively, of the Empire Offshore Wind FEIS. The Lessee's reserve amount must be determined, at a minimum, by the formula set out below.

6.1.3.1. The Lessee must have available, at a minimum, 100 percent of annual revenue exposure during the construction period and (pending BSEE's approval of Lessee's decommissioning application) projected decommissioning period, 100 percent of annual revenue exposure for the first year after construction, 80 percent of revenue exposure 2 years after construction, 70 percent of revenue exposure 3 years after construction, 60 percent after 4 years, and 50 percent for the 5th year post-construction. BSEE will evaluate the need for additional compensatory mitigation consistent with the Annual Certification under 30 C.F.R. § 285.633(a).

6.1.3.2. The compensation calculations described above must be normalized using the gross domestic product (GDP) Implicit Price Deflator (U.S. Bureau of Economic Analysis,[27] "Table 1.1.9. Implicit Price Deflators for Gross Domestic Product") once the construction year and 5 years post-construction are known.

6.1.4. Shoreside Support Services. At least 90 days prior to establishment of the Direct Compensation Program described in Section 6.1.3, the Lessee must submit to BOEM a Shoreside Support Services report for a 60-day review and approval. The report must include a description of the structure of the Fund and an analysis of the impacts of the Project to

[27] https://apps.bea.gov/iTable/?reqid=19&step=3&isuri=1&1921=survey&1903=11#eyJhcHBpZCI6MTksInN0ZXBzIjpbMSwyLDMsM10sImRhdGEiOltbIk5JUEFfVGFibGVfTGlzdCIsIjEzIl0sWyJDYXRlZ29yaWVzIiwiU3VydmV5Il0sWyJGaXJzdF9ZZWFyIiwiMjAyMCJdLFsiTGFzdF9ZZWFyIiwiMjAyMyJdLFsiU2NhbGUiLCIwIl0sWyJTZXJpZXMiLCJBIl1dfQ==

shoreside support services (such as seafood processing and vessel repair services) within communities near the ports:

- Atlantic City, NJ
- Barnegat, NJ
- Beaufort, NC
- Belford, NJ
- Belmar, NJ
- Brooklyn, NY
- Cape May, NJ
- Chincoteague, VA
- Davisville, RI
- Fairhaven, MA
- Fall River, MA
- Freeport, NY
- Hampton Bays, NY
- Hampton, VA
- Islip, NY
- Long Beach, NJ
- Montauk, NY
- Morehead City, NC
- Neptune, NJ
- New Bedford, MA
- New London, CT
- Newport News, VA
- Newport, RI
- North Kingston, RI
- Ocean City, MD
- Oriental, NC
- Other Nassau, NY
- Other Suffolk, NY
- Point Judith, RI
- Point Lookout, NY
- Point Pleasant, NJ
- Shark River, NJ
- Shinnecock, NY
- Stonington, CT
- Wanchese, NC
- Wildwood, NJ

6.1.5. Compensation Calculations. Once the values at Sections 6.1.3 and 6.1.4 are determined, the Lessee must use Table 6.1.5-1 and Table 6.1.5-2 to calculate the total reserve fund requirements. The amounts of the reserve fund requirements must be normalized to current real prices from a base year. The Lessee may use the prior year's GDP Implicit Price Deflator to

estimate Compensation and Mitigation Fund requirements after COP approval if the current year is unavailable. As described in Section 6.1.3.1, the Lessee must ensure the reserve amount allows for, at a minimum, 100 percent of annual revenue exposure during the projected construction years and, pending BSEE approval of decommissioning plan, decommissioning years. The Lessee must use the GDP Implicit Price Deflator ($\boldsymbol{n_i}$) to adjust the annual average commercial fisheries landings values and for-hire fishing revenue stated in Tables 3.9-12 and 3.9-20, respectively, of the Empire Offshore Wind FEIS. If the Lessee opts to construct the project in a phased approach, the fund may also be phased to reflect the phased construction, as long as the appropriate amount of funding for each phase is available at the time of construction of that phase. Before rolling forward any unclaimed funds, the total fund reserve requirements for Construction, Decommissioning, and Operating Years 1–5[28] of both projects (as shown in Table 6.1.5-2) are calculated using the following formula:

$$\boldsymbol{k}\left(\$2{,}143{,}622 \times \frac{\boldsymbol{n_i}}{110.213} + \$76{,}000 \times \frac{\boldsymbol{n_i}}{104.008}\right)(\mathbf{1}+\mathbf{M}) + \boldsymbol{j}\left(\$2{,}143{,}622 \times \frac{\boldsymbol{n_i}}{110.213} + \$76{,}000 \times \frac{\boldsymbol{n_i}}{104.008}\right)(\mathbf{1}+\mathbf{M}) + \left(\$10{,}718{,}310 \times \frac{\boldsymbol{n_i}}{110.213} + \$380{,}000 \times \frac{\boldsymbol{n_i}}{104.008}\right)(\mathbf{1}+\mathbf{M}).$$

[28] Rolling forward unclaimed funds from prior years may lower this total value.

Table 6.1.5-1. Calculation Subcomponents for Construction and Decommissioning

Project Status	Base Annual Average Fishing Revenue Exposed to the Wind Farm Area[1]	Exposure Ratio	Shoreside Support Services Multiplier[2]	Adjusted Base Annual Average Fishing Revenue Exposed to the Wind Farm Area	Reserve Requirements
Construction	$\left(\$2{,}143{,}622 \times \frac{n_i}{110.213} + \$76{,}000 \times \frac{n_i}{104.008}\right)$	1	M	$\left(\$2{,}143{,}622 \times \frac{n_i}{110.213} + \$76{,}000 \times \frac{n_i}{104.008}\right)$	$\left(\$2{,}143{,}622 \times \frac{n_i}{110.213} + \$76{,}000 \times \frac{n_i}{104.008}\right)(1 + M)$
Decommissioning[3]	$\left(\$2{,}143{,}622 \times \frac{n_i}{110.213} + \$76{,}000 \times \frac{n_i}{104.008}\right)$	1	M	$\left(\$2{,}143{,}622 \times \frac{n_i}{110.213} + \$76{,}000 \times \frac{n_i}{104.008}\right)$	$\left(\$2{,}143{,}622 \times \frac{n_i}{110.213} + \$76{,}000 \times \frac{n_i}{104.008}\right)(1 + M)$

Notes:

[1] Inflation-adjusted revenues from FEIS Tables 3.9-12 and 3.9-20. The inflation-adjusted base equation is:

$$\left(\boldsymbol{Average\ Annual\ Commercial\ Fishing\ Revenue} \times \frac{n_i}{\mathbf{110.213}} + \boldsymbol{Average\ Annual\ Recreational\ Fishing\ Revenue} \times \frac{n_i}{\mathbf{104.008}}\right)$$

[2] The Lessee's calculations of the Impacts to Shoreside Businesses Multiplier may use BOEM's draft *Guidelines for Mitigating Impacts to Commercial and Recreational Fisheries on the Outer Continental Shelf Pursuant to 30 C.F.R. part 585* or future versions, but BOEM must, in all events, review the calculations.

[3] Decommissioning funds may be required pending BSEE's approval of Lessee's decommissioning application. If Construction is expected to last *k* years and Decommissioning *j* years, the Lessee must calculate the reserve requirements as follows:

$$\boldsymbol{k}\left(\mathbf{\$2{,}143{,}622} \times \frac{n_i}{\mathbf{110.213}} + \mathbf{\$76{,}000} \times \frac{n_i}{\mathbf{104.008}}\right)(\mathbf{1} + \boldsymbol{M}) + \boldsymbol{j}\left(\mathbf{\$2{,}143{,}622} \times \frac{n_i}{\mathbf{110.213}} + \mathbf{\$76{,}000} \times \frac{n_i}{\mathbf{104.008}}\right)(\mathbf{1} + \boldsymbol{M})$$

Table 6.1.5-2. Calculation Subcomponents by Operating Year

Project Status	Base Annual Average Fishing Revenue Exposed to the Wind Farm Area[1]	Exposure Ratio	Shoreside Support Services Multiplier[2]	Adjusted Base Annual Average Fishing Revenue Exposed to the Wind Farm Area	Reserve Requirements
Operating Year 1	$\left(\$2,143,622 \times \frac{n_i}{110.213} + \$76,000 \times \frac{n_i}{104.008}\right)$	1	M	$\left(\$2,143,622 \times \frac{n_i}{110.213} + \$76,000 \times \frac{n_i}{104.008}\right)$	$\left(\$2,143,622 \times \frac{n_i}{110.213} + \$76,000 \times \frac{n_i}{104.008}\right)(1 + M)$
Operating Year 2	$\left(\$2,143,622 \times \frac{n_i}{110.213} + \$76,000 \times \frac{n_i}{104.008}\right)$	0.8	M	$\left(\$1,714,929 \times \frac{n_i}{110.213} + \$60,800 \times \frac{n_i}{104.008}\right)$	$\left(\$1,714,929 \times \frac{n_i}{110.213} + \$60,800 \times \frac{n_i}{104.008}\right)(1 + M)$
Operating Year 3	$\left(\$2,143,622 \times \frac{n_i}{110.213} + \$76,000 \times \frac{n_i}{104.008}\right)$	0.7	M	$\left(\$1,500,563.40 \times \frac{n_i}{110.213} + \$53,200 \times \frac{n_i}{104.008}\right)$	$\left(\$1,500,563.40 \times \frac{n_i}{110.213} + \$53,200 \times \frac{n_i}{104.008}\right)(1 + M)$
Operating Year 4	$\left(\$2,143,622 \times \frac{n_i}{110.213} + \$76,000 \times \frac{n_i}{104.008}\right)$	0.6	M	$\left(\$1,286,197.20 \times \frac{n_i}{110.213} + \$45,600 \times \frac{n_i}{104.008}\right)$	$\left(\$1,286,197.20 \times \frac{n_i}{110.213} + \$45,600 \times \frac{n_i}{104.008}\right)(1 + M)$
Operating Year 5	$\left(\$2,143,622 \times \frac{n_i}{110.213} + \$76,000 \times \frac{n_i}{104.008}\right)$	0.5	M	$\left(\$1,071,831 \times \frac{n_i}{110.213} + \$38,000 \times \frac{n_i}{104.008}\right)$	$\left(\$1,071,831 \times \frac{n_i}{110.213} + \$38,000 \times \frac{n_i}{104.008}\right)(1 + M)$

Operating Total[3]	-	-	-	$\left(\$10{,}718{,}310 \times \frac{\boldsymbol{n_i}}{110.213} + \$380{,}000 \times \frac{\boldsymbol{n_i}}{104.008}\right)$	$\left(\$10{,}718{,}310 \times \frac{\boldsymbol{n_i}}{110.213} + \$380{,}000 \times \frac{\boldsymbol{n_i}}{104.008}\right)(1 + M)$

Notes:

[1] Inflation-adjusted revenues from FEIS Tables 3.9-12 and 3.9-20. The inflation-adjusted base equation is:

$$\boldsymbol{A\left(Average\ Annual\ Commercial\ Fishing\ Revenue \times \frac{n_i}{110.213} + Average\ Annual\ Recreational\ Fishing\ Revenue \times \frac{n_i}{104.008}\right)}$$

[2] The Lessee's calculations of the Impacts to Shoreside Businesses Multiplier may use BOEM's draft *Guidelines for Mitigating Impacts to Commercial and Recreational Fisheries on the Outer Continental Shelf Pursuant to 30 C.F.R. part 585* or future versions, but BOEM must, in all events, review the calculations.

[3] Rolling forward unclaimed funds from prior years may lower this total value.

6.2.1 Reporting. By January 31 of each year, the Lessee must submit to BOEM and BSEE an annual report demonstrating implementation of the Direct Compensation Program. The report must include the following: the Fund charter, including the governance structure, audit and public reporting procedures; documentation regarding the funding account, including the dollar amount, establishment date, financial institution, and owner of the account; standards and eligibility criteria used for reviewing claims and paying compensatory mitigation for impacts to fishers and related shoreside businesses resulting from all phases of the project development on the Lease Area (pre-construction, construction, operation, and decommissioning).

6.2.2 Notification. The Lessee must notify BOEM and BSEE of the establishment of any compensation and mitigation funds under the terms above. The Lessee must request that the Administrator(s) of the direct compensation program(s) notify BOEM when the direct compensation program(s) has been established and is processing claims. Notification can be accomplished by the Administrator(s) transmitting to BOEM an annual financial statement of the direct compensation program(s). The Administrator(s) must submit the required notification by January 31 of each year, beginning on the second anniversary of the Project's Commercial Operations Date as defined by Addendum "B" of the Lease. The notification must be signed by the Administrator(s).

6.3 Fisheries Gear Loss Compensation (Planning) (Construction) (Operations). The Lessee must maintain throughout the life of the Project, a fisheries gear loss claims procedure. The fisheries gear loss claims procedure must be available to all fishermen impacted by Project activities or infrastructure, regardless of homeport.

6.4 Navigational Enhancement Training Program (NETP). The Lessee will establish a NETP for New York State commercial and for-hire fishermen in an amount equivalent of up to $13,000 per commercial vessel or inspected charter/party vessel and up to $8,000 per uninspected charter/party vessel. These amounts consist of: (1) up to $10,000 for navigation equipment per commercial vessel or inspected charter/party vessel and up to $5,000 for navigation equipment per uninspected charter/party vessel; and (2) up to $1,000 per person for training or experiential learning opportunities, with a maximum of three people per vessel. Vessels that receive funding under another state or project NETP will become ineligible for this program.

6.5 HRG Survey Conditions for Fisheries (Planning) (Construction). The Lessee will be required to follow its Fisheries Communication Plan to provide advanced notice of HRG survey plans to the commercial fishing industry in the region and must schedule surveys that, to the extent practicable, avoid peak longfin squid fishing activity in the survey area. The Lessee must avoid the use of boomers and sparkers in HRG surveys

in the 29 aliquots in the most northwestern portion of the Lease Area[29] from April 1 through July 31 of any year, as practicable.

6.6 Federal Survey Mitigation Program (Planning) (Construction) (Operations) (Decommissioning). There are 14 NMFS scientific surveys that overlap with wind energy development in the northeast region. Eight of these surveys overlap with the Project. Consistent with NMFS and BOEM survey mitigation strategy actions 1.3.1, 1.3.2, 2.1.1, and 2.1.2 in the NOAA Fisheries and BOEM Federal Survey Mitigation Implementation Strategy - Northeast US Region [30]within 120 days of COP approval, the Lessee must submit to BOEM a survey mitigation agreement between NMFS and the Lessee. The survey mitigation agreement must describe how the Lessee will mitigate the Project impacts on the nine NMFS surveys. The Lessee must conduct activities in accordance with such agreement.

If the Lessee and NMFS fail to reach a survey mitigation agreement, then the Lessee must submit a Survey Mitigation Plan to BOEM and NMFS that is consistent with the mitigation activities, actions, and procedures described in Sections 6.6.1 and 6.6.2 below, within 180 days of COP approval. BOEM will review the Survey Mitigation Plan in consultation with NMFS Northeast Fisheries Science Center (NEFSC). The Lessee must resolve comments to BOEM's satisfaction and must conduct activities in accordance with the plan.

6.6.1 As soon as reasonably practicable, but no later than 30 days after the issuance of the Project's COP approval, the Lessee must initiate coordination with NMFS NEFSC at nefsc.survey.mitig@noaa.gov to develop the survey mitigation agreement described above. Mitigation activities specified under the agreement must be designed to mitigate the Project impacts on the following NMFS NEFSC surveys: (a) Spring Multi-species Bottom Trawl survey; (b) Autumn Multi-species Bottom Trawl survey; (c) Ecosystem Monitoring survey; (d) Aerial marine mammal and sea turtle survey; (e) Shipboard marine mammal and sea turtle survey; (f) Atlantic surfclam and ocean quahog survey; (g) Atlantic sea scallop survey; and (h) Seal survey. At a minimum, the survey mitigation agreement must describe actions and the means to address impacts on the affected surveys due to the preclusion of sampling platforms and impacts on statistical designs. NMFS has determined that the project area is a discrete stratum for surveys that use a random stratified design. This agreement may also consider other anticipated Project impacts on NMFS surveys, such as changes in habitat and increased operational costs due to loss of sampling efficiencies.

6.6.2 The survey mitigation agreement must identify activities that will result in the generation of data equivalent to data generated by NMFS's affected surveys

[29] Lease OCS-A 0512, block 6655, aliquot P; block 6656, aliquots I, J, K, L,M,N,O,P; block 6657, aliquots M,N,O,P; block 6706, aliquots B,C,D,H; block 6707, aliquots A,B,C,D,E,F,G,H,J,K,L,P.

[30] Hare, J.A., Blythe, B.J., Ford, K.H., Godfrey-McKee, S., Hooker, B.R., Jensen, B.M., Lipsky, A., Nachman, C., Pfeiffer, L., Rasser, M. and Renshaw, K., 2022. NOAA Fisheries and BOEM Federal Survey Mitigation Implementation Strategy - Northeast US Region. NOAA Technical Memorandum 292. Woods Hole, MA. 33 pp.

for the duration of the Project. The survey mitigation agreement must describe the implementation procedures by which the Lessee will work with NEFSC to generate, share, and manage the data required by NEFSC for each of the surveys impacted by the Project, as mutually agreed upon between the Lessee and NMFS NEFSC. The survey mitigation agreement must also describe the Lessee's participation in the NMFS NEFSC Northeast Survey Mitigation Program to support activities that address regional-level impacts for the surveys listed above.

6.7 Environmental Data Sharing with Federally Recognized Tribal Nations (Planning) (Construction) (Operations) (Decommissioning). No later than 90 days after COP approval, the Lessee must make a request to both the BSEE Tribal Liaison Officer and the Eastern Seaboard Tribal Liaison at tribalengagement@bsee.gov to coordinate with federally recognized Tribal Nations with geographic, cultural, or ancestral ties to the project area (hereinafter "interested Tribal Nation"), including, but not limited to: the Absentee-Shawnee Tribe of Indians of Oklahoma, the Cayuga Nation, the Delaware Nation, the Oklahoma, the Delaware Tribe of Indians, the Eastern Shawnee Tribe of Oklahoma, the Mashantucket Pequot Indian Tribe, the Mashpee Wampanoag Tribe, the Mohegan Tribe of Indians of Connecticut, the Narragansett Indian Tribe, the Oneida Indian Nation, the Oneida Nation, the Onondaga Nation, the Saint Regis the Mohawk Tribe, the Seneca-Cayuga Nation, the Seneca Nation of Indians, the Shawnee Tribe, the Shinnecock Indian Nation, the Stockbridge Munsee Community, the Tonawanda Band of Seneca, the Tuscarora Nation, and the Wampanoag Tribe of Gay Head (Aquinnah). The purpose of this coordination is to (1) solicit Tribal Nation interest in participating as an environmental liaison during construction and/or maintenance activities, so the environmental liaison can safely monitor, and participate in postmortem examinations of mortality events, as a result of these activities; and (2) provide open access to the following: reports generated as a result of the Fisheries Research and Monitoring Plan; reports of NARW sightings; injured or dead protected species reporting (sea turtles, NARW, sturgeon); NARW PAM monitoring; PSO reports (e.g., pile driving reports); pile driving schedules and schedule changes; and any interim and final SFV reports, and its associated data. If an interested Tribal Nation expresses interest in participating as an environmental liaison, the Lessee must provide the interested Tribal Nation information regarding training(s), certification(s), and safety measures, required for participation. Environmental liaisons must be invited to monitor/participate from a safe platform, such as a vessel. The Lessee must provide to the interested Tribal Nation, in a manner suitable to the Tribal Nation, access to all ESA reports, Post Review Discovery Plans, and other documents listed in this paragraph no later than 30 days after the information becomes available. The Lessee may redact or withhold documents listed in this paragraph when it is information that the Lessee would not generally make publicly available and considers that the disclosure may result contrary to the Lessee's commercial interests. The Lessee must submit a justification for the request to redact/withhold in writing to the BSEE Tribal Liaison Officer and the Eastern Seaboard Tribal Liaison at tribalengagement@bsee.gov. Only upon approval of such request may the document be redacted/withheld.

7. CULTURAL AND VISUAL RESOURCE CONDITIONS

7.1. No Impact Without Approval (Planning) (Construction) (Operations) (Decommissioning). The Lessee may not knowingly impact a potential archaeological resource without BOEM's and BSEE's prior concurrence. If a possible impact to a potential archaeological resource occurs, the Lessee must immediately halt operations; report the incident within 24 hours to BOEM and BSEE; and provide a written report within 72 hours to BOEM and to BSEE via TIMSWeb with a notification email sent to env-compliance-arc@bsee.gov.

7.2. Scenic and Visual Impact Monitoring Plan (Construction) (Operations). In coordination with BOEM, the lessee must prepare and implement a scenic and visual resource monitoring plan that monitors and compares the visual effects of the wind farm during construction and O&M (daytime and nighttime) to the findings in the COP Visual Impact Assessment and verifies the accuracy of the visual simulations (photo and video). The monitoring plan shall include monitoring and documenting the meteorological influences on actual WTG visibility over a duration of time from selected onshore key observation points, as determined by BOEM and the Lessee. In addition, the Lessee must include monitoring the operation of ADLS in the monitoring plan. The Lessee shall monitor the frequency that the ADLS is operative, documenting when (dates and time) the aviation warning lights are in the on position and the duration of each event. Details for monitoring and reporting procedures must be included in the plan.

7.3. Reporting (Planning) (Construction) (Operations). The Lessee must submit all monitoring, reporting (annual, immediate, or post-discovery), and survey requirements related to cultural resources to BOEM and to BSEE via TIMSWeb with a notification email sent to env-compliance-arc@bsee.gov.

7.4. Avoidance of Known and Potential Shipwrecks, Debris Fields, and Ancient Submerged Landform Features (ASLFs) (Planning) (Construction) (Operations) (Decommissioning). The Lessee must avoid known and potential shipwrecks, potentially significant debris fields, and ASLFs as described below. The Lessee must identify avoidance requirements on proposed anchoring plots, as-placed plats, and drawings associated with seabed disturbances (e.g., relevant FDR/FIR documents for export cables, inter-array cables, WTG, etc.). If the Lessee determines that avoidance is not possible, the Lessee must notify BOEM and BSEE prior to disturbing the seabed in the excluded area. In such instances, BOEM will notify the Lessee of any additional requirements, which may include additional measures to resolve adverse effects. If any vessel conducting work on behalf of the Lessee- or any other activity associated with the planning, construction, operation or decommissioning disturbs the seabed within the avoidance areas noted below, the Lessee must submit an incident report to BOEM and BSEE within 24 hours.

7.5. Avoidance of Known Shipwrecks or Sunken Craft Sites and Potentially Significant Debris Fields (Planning) (Construction) (Operations) (Decommissioning). The Lessee must avoid known shipwrecks and potential submerged cultural resources, Targets 01–21, 23–26, and 28–30, as identified in the Marine Archaeological Resources Assessment [MARA] [COP Appendix X by a distance of no less than 50 meters from the known extent of the resource for placement of Project structures and when conducting seabed-disturbing activities. In addition, the Lessee must avoid Targets 22 and 27 by a minimum distance of 30 meters from the known extent of the resource for placement of Project structures and when conducting seabed-disturbing activities. The Lessee must identify avoidance stipulations and requirements on proposed anchoring plots, as-placed plats, and drawings associated with seafloor disturbances (e.g., relevant FDR/FIR documents for export cables, inter-array cables, WTG, etc.).

7.6. Avoidance of Ancient Submerged Landform Features. (Planning) (Construction) (Operations) (Decommissioning). The Lessee identified 22 Ancient Submerged Landforms (ASLF) in the project APE (COP Volume 3, Appendix X; Empire 2023). The Lessee must avoid nine of the 22 ASLFs (i.e., Targets 32, 34, 37, 38, 40, 43, 44, 46, and 50). No additional avoidance buffer is required for these ASLFs, because avoidance of the ASLFs is based on the defined spatial extent of each ASLF, which has been determined based on the maximum observed presence of the seismic reflector and unique buffer area designed to account for minimal positioning errors or lack of resolution. The Lessee must identify avoidance stipulations and requirements on proposed anchoring plots, as-placed plats, and drawings associated with seafloor disturbances (e.g., relevant FDR and FIR documents for export cables, inter-array cables, WTG, etc.). The remaining 13 ASLFs within the Lease Area (Targets 31, 33, 35, 36, 39, 41, 42, 45, 47, 48, 49, 51, and 52) cannot be avoided and would be affected by the Proposed Action.

7.6.1. Implementation of Mitigation Measures to Resolve Adverse Effects to ASLFs (Planning) (Construction). The Lessee must mitigate adverse effects to thirteen ASLFs (Targets 31, 33, 35, 36, 39, 41, 42, 45, 47, 48, 49, 51, and 52 as identified in the MARA [COP Appendix X]) that remain in the Area of Potential Effects (APE) and that cannot be avoided. These mitigation measures include the Post-Construction Geoarchaeological Assessment, Open-Source GIS and Story Maps development, and the ASLF Post-Constriction Seafloor Impact Inspection (including its various components). The Lessee must also work with Tribal nations to provide them an opportunity to participate as monitors during the investigation. The Lessee must execute all aspects of this condition, consistent with the Section 106 MOA. The Annual Certification under condition 7.3 must include reporting associated with Section 106 MOA compliance.

7.7. Avoidance Measures within the Terrestrial Area of Potential Effects (Planning) (Construction) (Operations). The Lessee must have an archaeological monitor present when the Projects' ground disturbing activities intersect with the

"Archaeological Monitoring Area" (Figure Y-2-12, Attachment Y-2, COP Appendix Y). In addition, the Lessee will work with Tribal Nations to provide them an opportunity to participate as monitors during ongoing ground disturbing activities in the area depicted in Figure Y-2-12 (Attachment Y-2, COP Appendix Y). The Lessee must execute all aspects of this condition of COP approval consistent with the Section 106 MOA (Stipulation I.B).

7.8. Scenic and Visual Impact Monitoring Plan (Construction) (Operations). In coordination with BOEM, the lessee must prepare and implement a scenic and visual resource monitoring plan that monitors and compares the visual effects of the wind farm during construction and O&M (daytime and nighttime) to the findings in the COP Visual Impact Assessment and verifies the accuracy of the visual simulations (photo and video). The monitoring plan must include monitoring and documenting the meteorological influences on actual WTG visibility over a duration of time from selected onshore key observation points, as determined by BOEM and the Lessee. In addition, the Lessee must include monitoring the operation of ADLS in the monitoring plan. The Lessee must monitor the frequency that the ADLS is operative, documenting when (dates and time) the aviation warning lights are in the on position and the duration of each event. Details for monitoring and reporting procedures must be included in the plan.

7.9. Apply Paint Color No Lighter than RAL (Reichs-Ausschuß für Lieferbedingungen und Gütesicherung) 9010 Pure White and No Darker than RAL 7035 Light Grey to the WTGs (Planning) (Construction) (Operations). The Lessee must color the WTGs an off white/grey color (no lighter than RAL 9010 Pure White and no darker than RAL 7035 Light Grey) prior to installation. The Lessee must confirm the planned paint color as part of the FDR and confirm the WTG was painted consistent with this condition as part of the final FIR.

7.10. Implementation of Minimization and Mitigation Measures to Resolve Adverse Effects to ASLFs (Planning) (Construction). The Lessee must mitigate adverse effects to thirteen ASLFs (Targets 21–26 and 28–30 as identified in the MARA [COP Appendix X]) that remain in the Area of Potential Effects (APE) and that cannot be avoided. The Lessee must execute all aspects of this condition, consistent with the Section 106 MOA (Stipulation III.A.1; Stipulation III.A.1; Attachment 8 *Mitigation Funding Amounts Proposed by Signatories and Consulting Parties;* and Attachment 3 *Marine Archaeological Resources Treatment Plan (MARTP) for the Empire Offshore Wind: Empire Wind Project (EW1 and EW2).* The Annual Certification under condition 7.3 must include reporting associated with Section 106 MOA compliance.

7.11. Additional Minimization Measures. The Lessee will use consistent and as far apart as possible, with maximum spacing in the dominant trawl tow direction where feasible, to decrease visual clutter, aligning WTGs to allow for safe transit corridors. Minimum WTG spacing of 0.65 nm with the exception that two WTGs near the southeastern boundary of EW1 would be spaced 0.57 nm apart.

7.12. Implementation of Minimization and Mitigation Measures to Resolve Adverse Effects to Terrestrial Archaeological Sites (Planning) (Construction) (Operations). The Lessee must ensure that an archaeological monitor will be present where the Projects' ground disturbing activities intersect the "Archaeological Monitoring Area" depicted on Figure Y-2-12 in Attachment Y-2 of the COP Appendix Y. Archaeological monitoring would reduce potential impacts on undiscovered archaeological resources to a minor level by preventing further physical impacts on the archaeological resources encountered during construction. If archaeological resources or human remains are identified during Project construction, operations, or decommissioning, the onsite construction supervisor would stop work immediately and follow the protocols outlined in the Empire Wind Terrestrial Post-Review Discovery Plan (Attachment 7). The Annual Certification under condition 7.3 must include reporting associated with Section 106 MOA compliance.

7.13. Implementation of Minimization and Mitigation Measures to Resolve Visual Adverse Effects to Historic Properties (Planning) (Construction). The Lessee must fund mitigation measures to resolve the adverse effects to the following 23 historic properties consistent with the Section 106 MOA:

- West Bank Light Station, Staten Island, NY
- Breezy Point Surf Club Historic District, Rockaway, NY
- Fort Tilden Historic District, Rockaway, NY
- Silver Gull Beach Club Historic District, Rockaway, NY
- Jacob Riis Park Historic District, Rockaway, NY
- Jones Beach State Park, Parkway and Causeway System, Hempstead/Oyster Bay, NY
- Gilgo State Park, Babylon, NY
- Robert Moses State Park, Babylon, NY
- Fire Island Lighthouse, Fire Island National Seashore, Islip, NY
- Fire Island Light Station Historic District, Fire Island National Seashore, Islip, NY
- Carrington House, Fire Island National Seashore, Brook Haven, NY
- Point O'Woods Historic District, Islip, NY
- Romer Shoal Light, Lower New York Bay, NY
- Sandy Hook Light, Middletown, NJ
- Fort Hancock and Sandy Hook Proving Ground Historic District, Middletown, NJ
- Fort Hancock U.S. Life Saving Station, Highlands, NJ
- Navesink Light Station (Twin Lights), Middletown, NJ
- Allenhurst Residential District, Allenhurst, NJ
- Berkeley-Carteret Hotel, Asbury Park, NJ
- Asbury Park Convention Hall, Asbury Park, NJ
- Asbury Park Casino and Carousel, Asbury Park, NJ
- Ocean Grove Camp Meeting Association District, Ocean Grove, NJ

- Water Witch (Monmouth Hills) Historic District

7.14. The Lessee must execute all aspects of this condition of COP approval consistent with the Section 106 MOA (Stipulation III.B; Stipulation III.B.4; Attachment 8 *Mitigation Funding Amounts*; Attachment 4, *Treatment Plan for Above-Ground Historic Properties Subject to Adverse Visual Effect*). The Annual Certification under condition 7.3 must include reporting associated with Section 106 MOA compliance.

7.15. The Lessee must conduct phased identification to identify and evaluate historic properties within the visual APE. The phased identification and evaluation of historic properties in New Jersey, including cumulative visual effects, will occur after publication of the Final EIS, but before the initiation of construction on the OCS lease consistent with Stipulation IV and Attachment 5 of the Section 106 MOA. BOEM will use the Memorandum of Agreement to ensure potential historic properties are identified, effects assessed, and adverse effects resolved prior to construction on the OCS lease; reviewing the sufficiency of these report updates as phased identification and evaluation of historic properties; and consulting on the post-ROD finding of effects.

7.16. Annual Monitoring and Reporting on the Section 106 MOA (Planning) (Construction) (Operations) (Decommissioning). By January 31 of each year, the Lessee must submit for BOEM's review a summary report detailing work undertaken pursuant to the Section 106 MOA during the preceding year. The Lessee must address any BOEM comments, and, after BOEM's review and agreement, the Lessee must share the summary report with all participating consulting parties identified in Attachment 2 of the Section 106 MOA. The report must include a description of how the stipulations relating to avoidance and minimization measures (Section 106 MOA Stipulations I and II) were implemented; any scheduling changes proposed; any problems encountered; and any disputes and objections received in BOEM's efforts to carry out the terms of the Section 106 MOA. The Lessee may satisfy this reporting requirement by providing the relevant portions of the Annual Certification required under 30 C.F.R. § 285.633.

7.17. Implementation of Post-Review Discovery Plans (Planning) (Construction) (Operations) (Decommissioning). If properties are discovered that may be historically significant or unanticipated effects on historic properties are found, the Lessee must implement the Post-Review Discovery Plans found in Section 106 MOA Attachment 6 *Empire Wind Unanticipated Discoveries Plan for Submerged Archaeolgoical Sites, Historic Properties, and Cultural Resources Including Human Remains*, and Attachment 7 *Empire Wind Monitoring and Unanticipated Discoveries Plan for Terrestrial Archaeological Resources, and*

7.17.1. All Post-Review Discoveries. In the event of a post-review discovery of a property or unanticipated effects to a historic property prior to or

during construction, operation, maintenance, or decommissioning of the Project, the Lessee must implement the following actions:

7.17.1.1. Immediately halt all ground- or seabed-disturbing activities within the area of discovery while taking into account whether stabilization and further protections are warranted to keep the discovered resource from further degradation and impact.

7.17.1.2. As soon as practicable and no later than 24 hours after the discovery, notify BOEM and notify BSEE (at env-compliance-arc@bsee.gov and via TIMSWeb) with a written report, describing the discovery in detail including a narrative description of the manner of discovery (e.g., date, time, heading, weather, information from logs); a narrative description of the potential resource, including measurements; images that may have been captured of the potential resource; portions of raw and processed datasets relevant to the discovery area; and any other information considered by the Lessee to be relevant to DOI's understanding of the potential resource. Provide the notification to BOEM and BSEE within 72 hours of its discovery. BOEM and BSEE may request additional information and/or request revisions to the report.

7.17.1.3. Keep the location of the discovery confidential and take no action that may adversely affect the archaeological resource until BOEM has made an evaluation and instructs the Lessee on how to proceed.

7.17.1.4. Conduct any additional investigations and submit documentation as directed by BOEM to determine if the resource is eligible for listing in the National Register of Historic Places (NRHP) (30 C.F.R. § 585.7027702(b)). The Lessee must satisfy this requirement only if (1) the site has been impacted by the Lessee's Project activities; and/or (2) impacts to the site or to the APE cannot be avoided. If investigations indicate that the resource is potentially eligible for listing in the NRHP, BOEM with the assistance of the Lessee how to protect the resource or how to mitigate adverse effects. BOEM will work with the other relevant signatories, invited signatories, and consulting parties who have a demonstrated interest in the affected historic property on the further avoidance, minimization, or mitigation of adverse effects.

7.17.1.5. If there is any evidence that the discovery is from a federally recognized Tribal Nation or appears to be a preserved burial site, the Lessee must contact BOEM as identified in the notification lists included in the Post-Review Discovery Plan

within 24 hours of the discovery. BOEM with the assistance of the Lessee will then share details of what is known about the discovery and consult with the federally recognized Tribal Nation pursuant to the Post-Review Discovery Plan.

7.17.1.6. If BOEM incurs costs in addressing the discovery, under Section 110(g) of the NHPA, BOEM may charge the Lessee reasonable costs for carrying out preservation responsibilities under OCSLA (30 C.F.R. § 585.7027702(c)-(d)).

7.18. No Impact Without Approval Emergency Situations (Planning) (Construction) (Operations) (Decommissioning). In the event of an emergency or disaster that is declared by the President or the Governors of New York or New Jersey, which represents an imminent threat to public health or safety or creates a hazardous condition due to impacts from the Project's infrastructure damaged during the emergency and affecting historic properties in the APEs, BOEM and BSEE, with the assistance of the Lessee, will notify the consulting federally recognized Tribal Nations, New York State Historic Preservation Office (SHPO), New Jersey SHPO, and the Advisory Council on Historic Preservation (ACHP), of the condition that has initiated the situation and the measures taken to respond to the emergency or hazardous condition in accordance with the Section 106 MOA. BOEM and BSEE will make this notification as soon as reasonably possible, but no later than 48 hours from when BOEM becomes aware of the emergency or disaster. Should the consulting federally recognized Tribal Nations, New York SHPO, New Jersey SHPO, or the ACHP desire to provide technical assistance to BOEM and BSEE, they will submit comments within 7 days from notification if the nature of the emergency or hazardous condition allows for such coordination.

7.18.1. No Impact Without Approval. The Lessee may not knowingly impact a potential archaeological resource without BOEM's and BSEE's prior concurrence. If a possible impact to a potential archaeological resource occurs, the Lessee must immediately halt operations; report the incident with 24 hours to BOEM and BSEE; and provide a written report to within 72 hours to BOEM and BSEE.

7.19. PAM Placement Review (Construction) (Operations) (Decommissioning). The Lessee may only place PAM systems in locations where an analysis of the results of geophysical surveys has been completed. This analysis must include a determination by a Qualified Marine Archaeologist as to whether any potential archaeological resources are present in the area. This activity may have been performed already as part of the Lessee's submission of archaeological resources reports in support of its approved COP. Except as allowed by BOEM under Stipulation 4.2.6 of Addendum C of the Lease and Section 7.12.1 above, the PAM placement activities must avoid potential archaeological resources by a minimum of 328 feet (100 meters), and the avoidance distance must be calculated from the maximum discernible extent of the archaeological resource. As-placed PAM system plats must be submitted to BSEE within 90 days of placement.

7.19.1. If the placement area was not previously reviewed and certified by a Qualified Marine Archaeologist in support of the Lessee's approved COP, a Qualified Marine Archaeologist must certify in an annual letter to BOEM that the Lessee's PAM placement activities did not impact potential historic properties identified as a result of the Qualified Marine Archaeologist's determination.

7.19.2. If PAM placement activities impact potential historic properties identified in the archaeological surveys without BOEM's prior authorization, the Lessee and the Qualified Marine Archaeologist who prepared the archaeological resources report must provide to BOEM a statement documenting the extent of the impacts. This statement must be made to BOEM and BSEE consistent with Stipulation 4.2.7 of Addendum C of the Lease and Section 7.11 above. BOEM may require the Lessee to implement additional mitigation measures as appropriate based on a review of the results and supporting information.

8. CONDITIONS RELATED TO AIR QUALITY

8.1. Reporting (Construction) (Operations) (Decommissioning). The Lessee must submit all monitoring, reporting, and survey requirements related to air quality to BOEM, BSEE, and the Environmental Protection Agency (EPA) at chan.suilin@epa.gov. If the EPA point of contact is no longer active, the Lessee must identify a point of contact through the EPA. The Lessee must confirm the relevant point of contact prior to reporting and confirmation of reporting receipt.

8.2. Sulfur Hexafluoride (SF_6) Leak Rate Monitoring and Detection (Construction) (Operations) (Decommissioning). The Lessee must adhere to International Electrotechnical Commission and applicable requirements in EPA's OCS air permits for SF_6 leak detection and monitoring requirements. The Lessee must also follow manufacturer recommendations for service and repair of the affected breakers and switches and conduct visual inspections of the switchgear and monitoring equipment according to manufacturer recommendations.

8.2.1. The Lessee must use enclosed-pressure SF_6 circuit breakers (or switches) and create alarms based on the pressure readings in the breakers and switches, so leaks can be detected when substantial SF_6 leakage occurs. Upon a detectable pressure drop that is greater than 10 percent of the original pressure (accounting for ambient air conditions), the Lessee must perform maintenance to fix seals within 14 days or within EPA permit requirements (whichever is earlier). If an event requires removal of SF_6, the affected major component(s) must be replaced with new component(s).

8.2.2. The Lessee must report any detectible pressure drop that is greater than 10 percent as soon as practicable or as specified in the EPA OCS air permit. No later than 72 hours after the discovery, the Lessee must notify BOEM and BSEE and provide an estimated timeframe for maintenance or replacement.

8.2.3. The Lessee must provide a summary in the Lessee's Annual Certification under 30 C.F.R. § 285.633 of observed SF_6 leak rates in the past year and a summary of any leaks greater than 0.1 percent by weight (for the 13.8 kV switches) and 0.5 percent by weight (for all other switches) and the associated maintenance or repair actions taken and their timeframe from detection to completion.

8.3. Air Quality Impacts and Permitting Requirements (Construction) (Operations). The Lessee is required under Clean Air Act § 328 (42 U.S.C. § 7627) to obtain an OCS air permit for OCS sources and must comply with all applicable regulations and permitting requirements under the OCS permit program at 40 C.F.R. part 55. If any requirement in Section 8 of these conditions is inconsistent with the terms of EPA's permit, the language in EPA's permit will prevail.

ATTACHMENT 1: LIST OF ACRONYMS

ACHP	Advisory Council on Historic Preservation
ADLS	Aircraft Detection Lighting System
ALARP	as low as reasonably practical
ANSI	American National Standards Institute
APE	Area of Potential Effects
API	American Petroleum Institute
ASLF	Ancient Submerged Landform Features
ASR	Airport Surveillance Radar
BiOp	Biological Opinion
BOEM	Bureau of Ocean Energy Management
BSEE	Bureau of Safety and Environmental Enforcement
CBRA	Cable Burial Risk Assessment
CHIRP	compressed high-intensity radiated pulse
CMR	Collision minimization report
COP	Construction and Operations Plan
CVA	Certified Verification Agent
dB	decibel
DGPS	Differential Global Positioning System
DOD	Department of Defense
DOFS	distributed optical fiber sensing
DOI	Department of the Interior
DON	Department of the Navy
DPS	distinct population segment
DTS	desktop study
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FDR	Facility Design Report
FEIS	Final Environmental Impact Statement
FIR	Fabrication and Installation Report
GARFO	Greater Atlantic Regional Fisheries Office
GDP	gross domestic product
GPS	Global Positioning System
HAT	Highest Astronomical Tide
HESD	Habitat and Ecosystem Services Division
HF	high frequency
HRG	high resolution geophysical
IEC	International Electric Code
IC	Incident Commander

IFC	issued for construction
IHA	Incidental Harassment Authorization
IMT	Incident Management Team
IOOS	Integrated Ocean Observing System
IR	infrared
ISO	International Organization for Standardization
ITA	Incidental Take Authorization
ITS	Incidental Take Statement
LERA	least expensive radar
LOI	Letter of Intent
LNM	Local Notice to Mariners
MARA	Marine Archaeological Resources Assessment
MEC	munitions and explosives of concern
MMPA	Marine Mammal Protection Act
MOA	Memorandum of Agreement
NARW	North Atlantic right whale
NEFOP	Northeast Fisheries Observer Program
NEFSC	Northeast Fisheries Science Center
NHL	National Historic Landmark
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NORAD	North American Aerospace Defense Command
NRHP	National Register of Historic Places
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
OEM	Original Equipment Manufacturer
OPR	Office of Protected Resources within NMFS
OSPD	Oil Spill Preparedness Division
OSRO	Oil Spill Removal Organization
OSRP	Oil Spill Response Plan
OSS	offshore substation
PAM	Passive Acoustic Monitoring or Passive Acoustic Monitor(s)
PATON	Private Aids to Navigation
PDM	Pile Driving Monitoring
PIT	passive integrated transponder
POWERON	Partnership for an Offshore Wind Energy Regional Observation Network
PSO	Protected Species Observer
QI	Qualified Individual
RAL	Reichs-Ausschuß für Lieferbedingungen und Gütesicherung
RAM	Radar Adverse Impact Management

ROD	Record of Decision
RPM	Reasonable and Prudent Measure
SDS	Safety Data Sheets
SF_6	sulfur hexafluoride
SFV	sound field verification
SHPO	State Historic Preservation Office
SMS	Safety Management System
SROT	Spill Response Operating Team
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
UTC	Coordinated Universal Time
UXO	unexploded ordnance
VHF	very high frequency
WCD	worst-case discharge
WTG	wind turbine generator

Appendix B. OCSLA Compliance Review of the Construction and Operations Plan for the Empire Wind Projects (EW 1 and EW 2)

United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT
WASHINGTON, DC 20240-0001

Information Memorandum

To: Elizabeth Klein
Director

From: Karen Baker
KAREN BAKER Digitally signed by KAREN BAKER Date: 2023.11.21 17:06:17 -05'00'
Chief, Office of Renewable Energy Programs

Subject: Compliance Review of the Construction and Operations Plan for the Empire Wind Offshore Commercial Wind Farm and Empire Wind Offshore Commercial Export Cable Projects for Commercial Lease OCS-A 0512

1 SUMMARY

Subsection 8(p)(4) of the Outer Continental Shelf Lands Act (OCSLA), 43 U.S.C. §§ 1337(p)(4), requires the Secretary of the Interior (Secretary) to approve activities in a manner that provides for 12 enumerated factors under subsection 8(p) of OCSLA. This memorandum documents the Bureau of Ocean Energy Management's (BOEM) compliance review of the Construction and Operations Plan (COP)[1] for the Empire Wind Offshore Wind Farm (Empire Wind) and Empire Wind Offshore Export Cable (E) Project (hereinafter "Projects")[2] on Commercial Lease OCS-A 0512, and BOEM's consideration of the 12 factors enumerated in subsection 8(p)(4) of OCSLA (hereinafter "8(p)(4) factors").[3]

BOEM has determined that the Projects will comply with the Bureau's regulations and that the proposed activities will be carried in a manner that provides for safety, protection of the environment, prevention of waste, and the other factors listed in subsection 8(p)(4) of OCSLA.

2 BACKGROUND AND PROJECT OVERVIEW

Subsection 8(p)(7) of OCSLA, as amended by the Energy Policy Act of 2005 (EPAct), directs DOI, through BOEM, to provide for coordination and consultation with the Governor of any state or the executive of any local government that may be affected by a lease, easement, or

---

[1] Empire Wind Construction and Operations Plan (May 2022). https://www.boem.gov/renewable-energy/state-activities/empire-wind-construction-and-operations-plan

[2] This memo considers the Project as modified by the preferred alternative in the FEIS, Alternative C-1, D, G, and H. Bureau of Ocean Energy Mgmt., BOEM 2023-049, Empire Wind Farm Export Cable Project Final Environmental Impact Statement, (2023) [hereinafter FEIS].

[3] See M-Opinion 37067, entitled, "*Secretary's Duties under Subsection 8(p)(4) of the Outer Continental Shelf Lands Act When Authorizing Activities on the Outer Continental Shelf*," which provides that 8(p)(4) of OCSLA "does not require the Secretary to ensure that the goals are achieved to a particular degree, and she retains wide discretion to determine the appropriate balance between two or more goals that conflict or are otherwise in tension." Solicitors' M-Opinions are legal interpretations that are binding on DOI as a whole. Dep't of the Interior, Departmental Manual, 209 DM 3.1, 3.2A(11) (2020).

right-of-way authorizing renewable energy activities on the OCS. BOEM formed the BOEM New York Renewable Energy Task Force (Task Force) in 2009 to help fulfill this obligation in its consideration of potential leasing activities on the Outer Continental Shelf (OCS) offshore New York. The Task Force allowed for coordination among affected federal agencies and tribal, state, and local governments throughout the leasing process. The first Task Force meeting was held on November 18, 2010; subsequent meetings were held on April 3, 2012; September 26, 2013; and April 28, 2016.

2.1 Planning, Analysis, and Leasing

On September 8, 2011, BOEM received an unsolicited request from the New York Power Authority (NYPA), Long Island Power Authority (LIPA), and Consolidated Edison (ConEd) for a commercial lease for NYPA. The proposal included the installation of up to 194, 3.6-megawatt (MW) wind turbines, yielding a potential 700 MW of wind energy generation.[4]

On January 4, 2013, BOEM issued a Request for Interest (RFI) in the Federal Register to assess whether there were other parties interested in developing commercial wind facilities in the same area proposed by NYPA.[5] In addition to inquiring about competitive interest, BOEM sought public comment on the NYPA proposal, its potential environmental consequences, and the use of the proposed Project Area.[6] Based on the responses received to the RFI, BOEM determined there to be competitive interest in the location identified by NYPA and continued with the competitive leasing process.

On May 28, 2014, BOEM published a Call for Information and Nominations (Call) to seek additional nominations from companies interested in commercial wind energy leases within the Call Area offshore New York.[7] BOEM also sought public input on the potential for wind development in the Call Area, including comments on site conditions, resources, and existing uses of the area that would be relevant to BOEM's wind energy development authorization process.

BOEM also published a Notice of Intent (NOI) to prepare an Environmental Assessment (EA) on May 28, 2014.[8] The EA's purpose was to determine whether significant impacts would be associated with issuing a lease, conducting site characterization surveys, and conducting site assessment activities (e.g., the installation of a meteorological tower and/or buoys) within the proposed area. Through the NOI, BOEM sought public input on the environmental and socioeconomic issues to be considered, as well as alternatives and mitigation measures.

---

[4] https://www.boem.gov/renewable-energy/state-activities/empire-wind

[5] https://www.govinfo.gov/content/pkg/FR-2013-01-04/pdf/2012-31654.pdf

[6] 18 30 C.F.R. § 585.113 defines "Project Area" as "the geographic surface leased, or granted, for the purpose of a specific project. If OCS acreage is granted for a project under some form of agreement other than a lease (i.e., a Right-of-Way or Right-of-Use and Easement), the federal acreage granted would be considered the Project Area. To avoid distortions in the calculation of the geometric center of the Project Area, project easements issued under this part are not considered part of the qualified Project Area." Note that the Project Area covers the entirety of the Lease Area Lease OCS-A 0512, which consists of approximately 79,350 acres (124 sqm).

[7] https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/NY/NY-NOI-FR-Notice.pdf

[8] *id*

On March 16, 2016, BOEM designated a Wind Energy Area (WEA), consisting of 5 OCS blocks and 148 sub-blocks. The WEA began approximately 11 nautical miles (nmi) south of Long Beach, New York, and extended approximately 26 nmi southeast along its longest portion.[9] BOEM received several comments as a result of the WEA designation, specifically regarding environmental concerns of sensitive habitat on Cholera Bank.

BOEM held a competitive lease sale in October 2016, pursuant to 30 CFR § 585.211, for certain lease areas within the WEA. On June 6, 2016, BOEM published a Proposed Sale Notice (PSN) for the area located offshore New York and New Jersey.[10] In response to comments from the National Marine Fisheries Service (NMFS), BOEM removed five aliquots, or 1,780 acres from the western tip of the identified WEA to avoid conflicts with Cholera Bank.

On October 27, 2016, BOEM announced the publication of the Final Sale Notice (FSN) for a lease sale offshore New York and the availability of a revised EA for site assessment and site characterization activities in the area.[11] The Lease Area covers approximately 79,350 acres (ac) (32,112 hectares (ha)) and is located approximately 14 statute miles (mi) (12 nautical miles (nm), 22 kilometers (km)) south of Long Island, New York and 19.5 mi (16.9 nm, 31.4 km) east of Long Branch, New Jersey.

2.2 Lease Sale

The lease sale was held on December 15 and 16, 2016. The auction lasted 33 rounds and was won by Statoil Wind US LLC, with a winning bid of just under $42.5 million, the highest amount bid in the program's history at that time. Lease OCS-A 0512 was issued to Statoil Wind US LLC effective as of April 1, 2017.[12]

As of May 16, 2018, Statoil Wind US LLC changed its name to Equinor Wind US LLC. On January 27, 2021, Equinor Wind US LLC assigned 100 percent of the lease to Empire Offshore Wind LLC, (Empire Wind) to facilitate an agreement in which BP Wind Energy North America, Inc. ("BP") would obtain an indirect 50 percent share in the Projects.

Lease OCS-A 0512 does not authorize Empire Wind to conduct construction activities within the leased area. Under Lease OCS-A 0512[13] and 30 C.F.R. part 585, Empire Wind must first submit and receive approval of a COP before any construction activities may take place on the OCS.[14] Submittal and processing of the COP is governed by the provisions set forth in 30 C.F.R. §§ 585.620 through 585.629.

2.3 Site Assessment

---

[9] https://www.boem.gov/renewable-energy/state-activities/empire-wind
[10] https://www.boem.gov/sites/default/files/regulations/Federal-Register-Notices/2016/81-FR-36336.pdf
[11] https://www.doi.gov/pressreleases/interior-department-auction-over-79000-acres-offshore-new-york-wind-energy-development
[12] https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/Bid-Summary-ATLW-6.pdf
[13] https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/NY/OCS-A-0512-Lease.pdf
[14] *See* 30 C.F.R. § 585.600(b)

In June of 2018, Empire Wind submitted a Site Assessment Plan (SAP) for review. The plan was subsequently revised per BOEM comments in July, August, and October 2018. BOEM determined the SAP was complete on August 22, 2018, and approved the SAP on November 21, 2018. The plan details the methods and procedures Empire Wind will use to collect and analyze data and information on the meteorological and oceanographic conditions of the Lease Area. The SAP approval allowed for the deployment of two RPS Floating Light Detection and Ranging buoys, one RPSTM Meteorological and Wave buoy, and one subsea Current Meter mooring.[15]

2.4 Construction and Operations

Empire Wind submitted a COP to BOEM on January 10, 2020, with subsequent revisions, including the most recent revision submitted on November 6, 2023.[16] The COP proposes the construction and operation of two wind farms, known as Empire Wind 1 (EW 1) and Empire Wind 2 (EW 2). Each wind farm will connect via offshore substations to separate Points of Interconnection (POIs) at onshore locations by way of export cable routes and onshore substations. The Project Overview is shown in Figure 1. The offshore components of the Projects will consist of up to 147 wind turbines and supporting tower structures and two offshore substations, using up to 149 foundations at any of up to 176 locations. In addition, there will be associated support and access structures (for aforementioned wind turbines and offshore substations) and up to 260 nm (481 km) of interarray cable (up to 116 nm (214 km) for EW 1 and up to 144 nm (267 km) for EW 2), all of which will be located on the OCS within the Lease Area.

The preferred alternative, which falls within the PDE, is a combination of Alternative C-1 (Gravesend Anchorage Area), Alternative D (Empire Wind 2 [EW 2] Submarine Export Cable Route Options to Minimize Impacts to the Sand Borrow Area), Alternative F (Wind Resource Optimization with Modifications for Environmental and Technical Considerations), Alternative G (Cable Bridge Crossing of Barnums Channel Adjacent to Long Island Railroad Bridge) and Alternative H (Dredging for Empire Wind 1 [EW 1] Export Cable Landfall). Specifically, the Preferred Alternative would entail the construction, operation, maintenance, and eventual decommissioning of an approximately 816-megawatt (MW) EW 1 Project and 1,260-MW EW 2 Project on the OCS offshore New York within Lease Area OCS-A 0512, with export cables making landfall at South Brooklyn Marine Terminal in Kings County, New York for EW 1 and on Long Beach in Nassau County, New York for EW 2. The Preferred Alternative would route the EW 1 export cable through an anchorage area at Gravesend Bay rather than through the Ambrose Navigation Channel; provide for a minimum 500-meter buffer between the EW 2 submarine export cable and a sand borrow area offshore Long Beach; optimize the EW 1 and EW 2 WTG layouts to maximize annual energy production and minimize wake loss while addressing geotechnical considerations; utilize an above-water cable bridge to construct the EW 2 onshore export cable crossing at Barnums Channel; and use a method of dredge or fill activities for construction of the EW 1 export cable landfall that would reduce the discharge of dredged material. BOEM does not have authority under Outer Continental Shelf Lands Act (OCSLA) to

[15] https://www.boem.gov/renewable-energy/state-activities/empire-wind
[16] https://www.boem.gov/renewable-energy/state-activities/empire-wind-construction-and-operations-plan

approve proposed facilities that would be located within the state of New York, and BOEM would coordinate with cooperating agencies regarding this aspect of the Preferred Alternative.

The regulations at 30 C.F.R. § 585.200(b) entitle a lessee to one or more project easements, without further competition, for the purpose of installing transmission and distribution cables and appurtenances on the OCS as necessary for the full enjoyment of the lease. In accordance with 30 C.F.R. § 585.622(b), Empire Wind requested project easements as part of its COP. As proposed in the COP, the Projects will include up to 66 nm (122 km) of submarine export cables, consisting of up to two routes to New York. The COP further proposes that the EW 1 export cable will interconnect in Gowanus, NY and the EW 2 export cable will interconnect in Oceanside, NY. The export cable route for Empire Wind 1 contains two High Voltage Alternating Current (HVAC) export cables, ranges from a maximum width of 1010 ft (307.8 m) to a minimum width of 500 ft (152.4 m). The proposed Empire Wind 2 project easement contains two HVAC export cables, ranges from a maximum width of 900 ft (274.3 m) to a minimum width of 500 ft (152.4 m). Empire Wind requested an easement width greater than 200 ft to allow for safe cable maintenance operations and installation of repair and construction jointing and omega bights, which may require an installation width up to five times water depth. Water depths range from approximately 40 ft (12m) to 121 ft (37 m) within the proposed project easements. Empire Wind also requested that the project easement include inter-array cables in select locations outside of their lease area necessary to facilitate their layout as proposed in the COP.

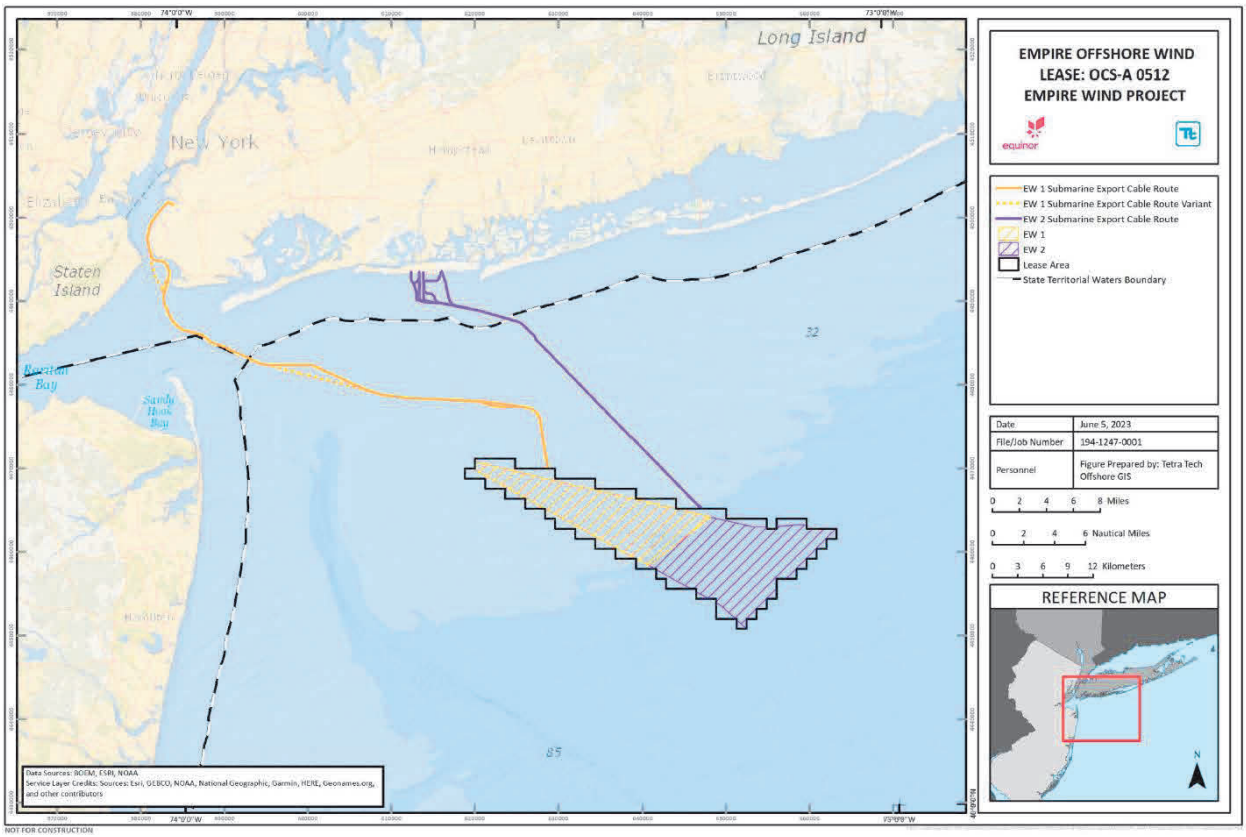

Figure 1: Project Overview – Lease Area and Submarine Export Cable Routes

3 SECTION 585.628 REVIEW

As noted in Section 2, the regulations at 30 C.F.R. §§ 585.620 through 585.629 govern BOEM's review and processing of COPs. The regulations at 30 C.F.R § 585.628 require BOEM to review the COP and all information provided therein pursuant to 30 C.F.R. §§ 585.626 and 585.627, to determine whether the COP contains all the information necessary to be considered complete and sufficient for BOEM to conduct technical and environmental reviews.[17] Once BOEM determines that the COP is complete and sufficient, BOEM and the Bureau of Safety and Environmental Enforcement (BSEE) conduct a technical review, and BOEM conducts an environmental review. As described below, BOEM's Office of Renewable Energy Programs (OREP) has completed the sufficiency, technical, and environmental reviews of the Empire Wind COP.

3.1 Completeness and Sufficiency Review

30 C.F.R. § 585.620 provides the general requirements of what must be described in a COP, 585.627, the Lessee must submit information and certifications necessary for BOEM to comply with the National Environmental Policy Act of 1969 (NEPA) and other relevant laws.

In a letter submitted on January 10, 2020, Empire Wind requested a regulatory departure from 30 C.F.R. § 585.626(a)(4)(ii), which requires that detailed in situ geotechnical data at each proposed foundation location be provided at the time of COP submittal. Instead of submitting the in situ geotechnical data with the COP, Empire proposed to provide the data no later than with its submittal of the Facility Design Report and the Fabrication and Installation Report (FDR/FIR), when the Project design and associated Project design envelope was more mature. OREP's Projects and Coordination Branch (PCB) evaluated the departure request and coordinated BOEM's review. On November 3, 2020, BOEM approved the departure request after determining that the geotechnical information submitted by Empire Wind at that point was sufficient to allow for review of the COP. Therefore, BOEM approved the departure request, allowing Empire Wind to submit geotechnical investigations at final foundation locations with or prior to the FDR along with results of geotechnical analyses and foundation design parameters.

In a separate letter submitted on January 10, 2020, Empire Wind requested a regulatory departure from 30 C.F.R. § 585.626(a)(2), (4)(i), (5) and (6), which requires a full data package for geophysical and geotechnical data in support of the COP be provided to BOEM at the time of COP submission. BOEM determined that a formal departure approval was not required as Empire Wind proposed a schedule of supplemental filings to submit during COP review the information identified in 30 C.F.R. § 585.626(a)(2), (4)(i), (5) and (6). BOEM determined that the schedule would provide BOEM with sufficient time to conduct its reviews, initiate federal agency consultations, and begin the NEPA process. BOEM approved the proposed approach.

On January 10, 2020, Empire Wind submitted a COP to BOEM for review and approval. On January 21, 2020, PCB in coordination with OREP's Engineering and Technical Review Branch (ETRB) and Environment Branch for Renewable Energy (EBRE) verified that the COP included an adequate level of information required in 30 C.F.R. §§ 585.626 and 585.627 for BOEM to

[17] See 30 C.F.R. §§ 585.620 through 585. 629.

begin reviewing the sufficiency of that information. PCB coordinated BOEM's sufficiency review of the Empire Wind COP. Throughout the review process, BOEM evaluated the information provided in response to its requests for additional information, as well as the updated COPs Empire Wind submitted, and determined that the information provided was sufficient in accordance with the regulations.

BOEM has determined that the COP includes all the information required in 30 C.F.R. §§ 585.626 and 585.627, except the information described in 30 CFR § 585.626(a)(4)(ii), for which BOEM approved a regulatory departure. Following COP approval Empire Wind must submit the following information no later than when it submits its Facility Design Report (FDR):

- Updated information required in 30 CFR § 585.626(a)(4)(2); the results of deep borings within the Project Area, as needed.

3.2 Technical Review

ETRB reviewed the proposed facilities, project design, project activities, shallow hazards, geological conditions, physical and oceanographic conditions, cables, and fabrication and installation details in the COP, and coordinated with the following agencies:

- BSEE, for safety (Safety Management System (SMS) and Oil Spill Response Plan);
- National Oceanic and Atmospheric Administration (NOAA), for aviation and radar interference; and
- Federal Aviation Administration (FAA), for aviation and radar interference; and
- United States Coast Guard (USCG), for vessel navigation.

Furthermore, ETRB and BSEE reviewed the statement of work and qualifications submitted in the COP for the Certified Verification Agent (CVA) nomination. On June 24, 2020, BOEM approved the nomination of DNV GL Denmark A/S (now DNV) to be the CVA for the Projects. DNV will review Empire Wind's submitted FDR and FIR and must certify that the project facilities are designed, fabricated, and installed in conformance with accepted engineering practices.

As a result of these reviews, ETRB has determined both the technical information and supporting data provided with the COP meet the requirements of 30 C.F.R. § 585.626 and are sufficient to allow the safe installation of the Projects on the OCS. ETRB has also concluded that the COP proposes the use of properly trained personnel and the best available and safest technology, pursuant to 30 C.F.R. § 585.621. ETRB provided a memorandum (ETRB Review Memo; Appendix B.1 to the Record of Decision (ROD)), which recommends the approval of the COP subject to ETRB's proposed conditions (Anticipated Conditions of COP Approval; Appendix A to the ROD).

3.3 Environmental Review

OREP's EBRE conducted an environmental review of the COP. On June 24, 2021, BOEM published the NOI to prepare an environmental impact statement (EIS) for Empire Wind's COP[18], which started BOEM's formal scoping process pursuant to NEPA. The Notice of Availability (NOA) of the Draft EIS for the Projects was published on November 18, 2022.[19] The U.S. Army Corps of Engineers (USACE), NMFS, BSEE, U.S. Department of Defense (DoD), USCG, U.S. Fish and Wildlife Service (USFWS), the U.S. Environmental Protection Agency (USEPA), National Park Service (NPS), and U.S. Maritime Administration (MARAD) were cooperating federal agencies during the development and review of the Final EIS. Cooperating state agencies included New York State Department of State (NYSDOS), New York State Energy Research and Development Authority (NYSERDA), New York State Department of Environmental Conservation (NYSDEC), and City of New York Economic Development Commission.

BOEM initiated consultation under Section 106 of the National Historic Preservation Act (NHPA) prior to the NOI. BOEM elected to use the NEPA substitution procedures allowed under 36 C.F.R. 800.8(c). BOEM included a draft Finding of Adverse Effect and draft agreement to resolve effects with the Draft EIS, and BOEM included updated versions of those documents in the Final EIS. On November 20, 2023, the final Memorandum of Agreement resolving adverse effects on historic properties was executed.[20]

Moreover, BOEM consulted with federally recognized tribes regarding renewable energy leasing and development on the OCS. The following federally recognized tribes were invited to consult: Eastern Shawnee Tribe of Oklahoma; Shawnee Tribe; Absentee-Shawnee Tribe of Indians of Oklahoma; Stockbridge-Munsee Community, Wisconsin/Band of Mohican Indians; The Delaware Nation; Delaware Tribe of Indians; The Shinnecock Indian Nation; The Narragansett Indian Tribe; Wampanoag Tribe of Gay Head (Aquinnah); Mashpee Wampanoag Tribe, Mashantucket Pequot Tribal Nation; and Mohegan Tribe of Connecticut. Of the federally recognized tribes only the Stockbridge-Munsee Community, Wisconsin/Band of Mohican Indians; The Delaware Nation; Delaware Tribe of Indians; The Shinnecock Indian Nation; Wampanoag Tribe of Gay Head (Aquinnah); Mashantucket Pequot Tribal Nation; and Mashpee Wampanoag Tribe participated in government-to-government consultation meetings. BOEM held four government-to-government meetings with federally recognized Tribes in July 2021, and on August 3, 2021, April 28, 2023, and September 7, 2023.

---

[18] https://www.federalregister.gov/documents/2021/06/24/2021-13408/notice-of-intent-to-prepare-an-environmental-impact-statement-for-empire-offshore-wind-llcs-proposed

[19] https://www.federalregister.gov/documents/2022/11/18/2022-25034/notice-of-availability-of-a-draft-environmental-impact-statement-for-empire-offshore-wind-llcs

[20] *See* https://ceq.doe.gov/docs/ceqpublications/NEPA_NHPA_Section_106_Handbook_Mar2013.pdf and https://www.achp.gov/integrating_nepa_106 for details on the NEPA/NHPA Integration or Substitution Process

On September 15, 2023, BOEM published the NOA of the Final EIS in the *Federal Register*.[21] Alternatives C-1, D, F, G, and H[22] were identified as the Preferred Alternatives and the Final EIS included in Appendix P BOEM's responses to comments on the Draft EIS. The Final EIS found that the Proposed Action and Preferred Alternatives C-1, D, F G, and H, would have negligible to moderate adverse impacts on most resources and only the potential for major adverse impacts on (i) marine mammals, (ii) scenic and visual resources, (iii) commercial fisheries and for-hire recreational fisheries, and (iv) scientific research. The Final EIS also found that the Projects could have, to some extent, beneficial impacts on the following resources: (i) sea turtles, (ii) benthic resources, (iii) birds, (iv) air quality, (v) land use and coastal infrastructure, (vi) recreation and tourism, (vii) demographics, (viii) employment, and (ix) economics.

Regarding impacts from future planned actions, including the Projects, the Final EIS found that the following resources could be subject to major impacts if future planned actions materialize and no further actions are taken to mitigate their impacts: marine mammals, scenic and visual resources, commercial fisheries and for-hire recreational fisheries, scientific research and surveys, navigation and vessel traffic. The Final EIS also found that future planned actions could have beneficial impacts on the following resources: sea turtles, benthic resources, birds, air quality, land use and coastal infrastructure, recreation and tourism, demographics, employment, and economics. Cumulative impacts on all resources range from negligible to major. The 30-day waiting period for the Final EIS closed on October 16, 2023.

Several consultations were conducted as part of the environmental review process. On September 8, 2023, NMFS issued a Biological Opinion (BiOp) for the Projects under Section 7 of the Endangered Species Act (ESA).[23] The BiOp concluded that the Projects are not likely to jeopardize the continued existence of blue, fin, sei, sperm, or North Atlantic right whales (NARW), loggerhead sea turtles, Kemp's ridley or leatherback sea turtles, the North Atlantic distinct population segment (DPS) of green sea turtles, the shortnose sturgeon, or any Atlantic sturgeon. The Projects are not likely to destroy or adversely modify critical habitat designated for the NARW, Atlantic sturgeon, and the Northwest Atlantic DPS of loggerhead sea turtles. The BiOp also determined that the Projects will have no effect on the Gulf of Maine DPS of Atlantic salmon, the Northeast Atlantic DPS of loggerhead sea turtles, or critical habitat designated for the NARW, the New York Bight and Carolina DPSs of Atlantic sturgeon, or the Northwest Atlantic DPS of loggerhead sea turtles. NMFS concurs with BOEM's determination that the proposed action is not likely to adversely affect blue whales, giant manta rays, hawksbill sea turtles, or oceanic whitetip sharks, and determined that the proposed action will have no effect on Rice's whales. To be exempt from the prohibitions of Section 9 of the ESA, BOEM, BSEE, USACE, and NMFS' Office of Protected Resources must comply with the Reasonable and Prudent Measures and implementing Terms and Conditions issued as part of the BiOp.

---

[21] https://www.federalregister.gov/documents/2023/09/15/2023-19956/notice-of-availability-of-the-empire-offshore-wind-final-environmental-impact-statement

[22] EIS Alternatives C-1, D, F G, and H narrow the Project Design Envelope (PDE) proposed in Empire's COP to select export cable route options or construction methods that reduce environmental impacts or use conflicts compared the Proposed Action (which includes analysis of the full range of PDE parameters).

[23] https://www.fws.gov/law/endangered-species-act

On June 23, 2023, USFWS transmitted a BiOp and concluded consultation and conference for the Projects. The BiOP concluded the Projects are not likely to jeopardize the continued existence of the federally listed piping plover, rufa red knot, roseate tern, northern long eared and tricolored bats, the Monarch butterfly, or Seabeach amaranth.[24]

BOEM also completed an Essential Fish Habitat (EFH) consultation under the Magnuson-Stevens Fishery Conservation and Management Act (MSA)[25] and received conservation recommendations from NMFS on July 28, 2023, pursuant to Section 305(b)(4)(A) of the MSA. According to Section 304(b)(4)(B) of the MSA, BOEM is required to provide NMFS a detailed response to each EFH conservation recommendation within 30 days of receipt. BOEM issued a detailed response letter to NMFS on October 24, 2023. The detailed response to the conservation recommendations provided draft conditions of COP approval that adopt or partially adopt NMFS's conservation recommendations, which BOEM has included in Appendix A of the ROD.

BOEM also conducted a NHPA[26] Section 106 review of the Projects and, through that review, identified historic properties that may be adversely affected by COP approval, and measures to resolve those adverse effects. BOEM identified three National Historic Landmark (NHL) properties (Sandy Hook Light, Fort Hancock and Sandy Hook Proving Ground Historic District, and Navesink Light Station (Twin Lights)) that may be visually adversely affected by the Projects. BOEM followed the requirements for compliance with NHPA Section 110(f) (36 C.F.R. § 800.10) and consulted with the NPS, New York and New Jersey State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP) to assess and undertake planning and actions as may be necessary to minimize harm to NHLs. BOEM addressed this process and finding in Appendix N, Section N.6, National Historic Landmarks, and the NHPA Section 106 Process of the Final EIS. Consultation under Section 106 of the NHPA concluded with the execution of the Memorandum of Agreement (MOA), which was signed by the Lessee, BOEM, the New York and New Jersey SHPOs, and the ACHP, and fully executed on November 20, 2023.

Empire Wind submitted requests for Federal Consistency Certification to the States of New York and New Jersey under the Coastal Zone Management Act (CZMA).[27] Acting under Section 307 of the Federal CZMA (Pub. L. No. 92-583), as amended, the coastal management programs for the States of New York and New Jersey concurred with Empire Wind's consistency certification, finding the Projects are consistent to the maximum extent practicable with the enforceable policies of each state's coastal management plan. Empire Wind provided BOEM with the CZMA concurrence letters issued by New York on October 16, 2023, and New Jersey on September 15, 2023.

---

[24] *See* Letter from Ian Drew, Field Supervisor, Long Island Field Office, Fish and Wildlife Serv., to Brandi Sangunett, OREP, BOEM (June 22, 2023).
[25] https://www.fisheries.noaa.gov/resource/document/magnuson-stevens-fishery-conservation-and-management-act
[26] https://www.nps.gov/subjects/archeology/national-historic-preservation-act.htm
[27] *See* 16 U.S.C. §§ 1451 *et seq*.

4 COMPLIANCE REVIEW[28]

The regulations at 30 C.F.R. part 585 set forth responsibilities for both BOEM and Empire Wind that are similar to those imposed by the 8(p)(4) factors.[15] The regulations at 30 C.F.R. § 585.102 require BOEM to ensure that any activities authorized under part 585 are carried out in a manner that provides for 12 enumerated goals. Similarly, 30 C.F.R. § 585.621 requires the COP to demonstrate that Empire Wind has planned and is prepared to conduct the proposed activities in a manner that conforms to its responsibilities listed in 30 C.F.R. § 585.105(a), as well as 7 other goals listed therein. BOEM and Empire Wind share some of the responsibilities (e.g., ensuring that activities are carried out in a safe manner), while others are the responsibility of either BOEM (e.g., ensuring a fair return to the United States) or Empire Wind (e.g., using properly trained personnel). The discussion in the following sections, 4.1 to 4.12, provides an overview of how BOEM has ensured the selected alternative provides for the 8(p)(4) factors and the regulations at 30 C.F.R. part 585. Because many of these goals are related to the same topic or overlap one another, some are analyzed together.

4.1 Conforms to All Applicable Laws, Regulations, and Lease Provisions of Empire Wind's Commercial Lease[29]

Consultations and reviews for the Projects under NEPA, ESA, CZMA, MSA, and NHPA have been completed. Further, approval of the COP would prohibit Empire Wind from commencing construction activities for which additional permits and authorizations are required, including permits and permissions requested by Empire Wind under Section 10 of the Rivers and Harbors Act of 1899 (RHA), Section 404 of the Clean Water Act, and Section 14 of the RHA from USACE, and Incidental Take Regulations and an associated Letter of Authorization under the Marine Mammal Protection Act from NMFS. Section 1.5 of the COP (Regulatory Framework) lists all expected federal, New York State, regional (county), and local-level reviews and permits for the Projects.[30]

4.2 Safety, Best Available and Safest Technology, Best Management Practices, and Properly Trained Personnel[31]

The Empire Wind Project COP proposed the following major offshore components:

- Up to 147 wind turbine generators (WTGs);
- Each WTG would be supported by a monopile foundation;
- Inter-array cables with an operating voltage of 66 kilovolts (kV);

---

[28] *See* 43 U.S.C. § 1337(p)(4) (OCSLA Subsection 8(p)(4)); 30 C.F.R. §§ 585.102, 585.621.
[29] *See* id. §§ 585.102(b), 585.621(a).
[30] https://www.boem.gov/sites/default/files/documents/renewable-energy/Public_EOW%20COP_v5_Volume%201_Redacted.pdfhttps://www.boem.gov/sites/default/files/documents/renewable-energy/Public_EOW COP_v5_Volume 1_Redacted.pdf
[31] *See* 43 U.S.C. § 1337(p)(4)(A); 30 C.F.R. §§ 585.102(a)(1), 585.621(b), 585.621(e)-(g).

- Up to 2 offshore substations on a piled jacket foundation;
- Interconnection cables with a voltage of 138-345 kV; and
- The export cables would consist of up to (4) buried submarine high-voltage alternating-current cables.

As documented in ETRB's memo (attachment #6), BOEM expects Empire Wind to use the most current technology available for commercial production that meets or exceeds current industry standards. In some cases, this could include technologies currently in prototyping and/or working toward type certification by a recognized certification body but not yet commercially available. ETRB has determined that the information on the proposed major components provided in the COP is sufficient to determine that the Projects propose to use the best available and safest technology pursuant to 30 C.F.R. § 585.621(e) which will meet or exceed the current international industry standards. The approved CVA will confirm as much by certifying that the facility is designed, fabricated, and installed in accordance with the COP and approved industry standards. BOEM and BSEE will also confirm that the design is in accordance with the COP through review of the FDR and FIR.

The engineering design of the WTGs and their ability to sufficiently withstand weather events—which include hurricane-level events—are independently evaluated by a CVA when reviewing the FDR and FIR according to international standards. One of these standards calls for the structure to be able to withstand a 50-year return interval event. An additional standard also includes withstanding 3-second gusts of a 500-year return interval event. WTGs are designed to withstand the oceanographic and meteorological conditions expected in the Lease Area, including hurricane force winds.

Further, OREP consulted with BSEE and the USCG on safety requirements during the COP review process. BSEE's recommendations and relevant requirements have been incorporated into the proposed conditions of approval for the COP to ensure the Projects are carried out in a safe manner.[32] Additionally, oversight of the review of future submissions (e.g., FDR and FIR activities) will allow BSEE to evaluate if the "facilities are designed, fabricated, and installed in conformance with accepted engineering practices."[33]

The COP also provides a description of the Projects' proposed SMS,[34] as required by 30 C.F.R. § 585.627(d). The proposed SMS, which will be finalized following any COP approval, includes a description of the processes and procedures listed in 30 C.F.R. § 285.810(a)-(f), and Empire Wind's proposed implementation thereof. Furthermore, the finalized SMS must describe the methods that are used and maintained to control the identified risks. BOEM determined that Empire Wind's proposals are consistent with acceptable industry practices and standards. Specifically, the SMS provides that all contractors will be legally qualified to perform the roles for which they are contracted, including implemented prescribed safety standards and attending

[32] *See* infra. Anticipated Terms and Conditions of COP Approval, Appendix A to the ROD.
[33] *See* 30 C.F.R. § 285.705(a)(1).
[34] *See* COP vol. I, app. B. https://www.boem.gov/renewable-energy/state-activities/empire-wind-construction-and-operations-plan

awareness training. Empire Wind will be responsible for overseeing that contractors comply with these obligations.

4.3 Protection of the Environment and Prevention of Undue Harm or Damage to Natural Resources; Life (including human and wildlife); Property; the Marine, Coastal, or Human Environment; or Sites, Structures, or Objects of Historical or Archaeological Significance[35]

Minimizing environmental impacts through the assessment of environmental resources is integral to BOEM's planning and leasing phase of offshore wind development. The Final EIS (BOEM, 2023) determined that the majority of the potential adverse impacts to the environment and natural resources are negligible to moderate. The Final EIS concluded that the Projects would potentially result in major impacts only to commercial and for-hire recreational fisheries; marine mammals, such as the NARW; scientific research and surveys; and scenic and visual resources.[36] The Final EIS identified a range of adverse impacts to environmental, socioeconomic, and cultural resources, which are summarized in the ROD. In addition, as the Final EIS concluded, the Preferred Alternative could have beneficial impacts on the following resources: (i) air quality; (ii) benthic resources, (iii) birds, (v) demographics, employment, and economics; (vi) land use and costal infrastructure; (vii) recreation and tourism; and (x) sea turtles. The numerous consultations performed under various federal statutes, and the analysis in the Final EIS, indicate that approval of the Preferred Alternative would not result in undue harm to environmental resources. For all adverse impacts, mitigation measures were identified and will be incorporated in the terms and conditions of COP approval. This includes measures identified during consultations.

As described in Section 3.3 above, BOEM analyzed in the Final EIS the potential environmental effects of the proposed activities described in the COP. Appendix H of the Final EIS specifically references measures to be taken or mitigation measures recommended to protect the environment. BOEM has also engaged in consultations under the ESA, the MSA, and the NHPA. As a result of the ESA consultation, NMFS issued the BiOp for the Projects on September 8, 2023, and USFWS on June 23, 2023. BiOp conclusions are discussed above in Section 3.3. To minimize impacts, both the FWS and NMFS BiOps include Reasonable and Prudent Measures and implementing Terms and Conditions that must be made conditions of approval. BOEM also consulted with NMFS in accordance with Section 305(b)(2) of the MSA. BOEM analyzed potential adverse impacts of the Projects on EFH in an EFH Assessment deemed complete by NMFS on April 13, 2023.[37] NMFS issued a letter on July 27, 2023, in which the agency provided 37 conservation recommendations to avoid and minimize impacts to EFH for activities within the OCS and state waters. Ten of the 37 recommendations--those that applied to activities in state waters--are under USACE's jurisdiction for implementation. BOEM provided a detailed response to NMFS via an October 23, 2023, letter regarding how each of the conservation recommendations would be applied to the Projects. BOEM fully or partially adopted 25 of the 27 conservation recommendations under BOEM's jurisdiction. Conservation recommendation #1 was not adopted because it is not feasible for the Projects to relocate any wind turbine generators proposed in the area described by NMFS as Cholera Bank. Conservation recommendation #19

[35] *See* 43 U.S.C. § 1337(p)(4)(B); 30 C.F.R. §§ 585.102(a)(2), 585.621(d).
[36] https://www.boem.gov/renewable-energy/state-activities/empire-wind-final-eis
[37] *See* BOEM, OREP, Empire Wind Essential Fish Habitat Assessment (2023).

was not adopted because a time of year restriction on construction activities from April 1 through July 31 to protect longfin squid is not economically or technically feasible.

BOEM also conducted NHPA Section 106 consultation with the 44 consulting parties made up of 7 federal agencies (including the ACHP), 6 federally-recognized Tribes, 2 State agencies (including the New York and New Jersey Historic Preservation Offices), 16 local governments, 7 nongovernmental organizations and/or groups or private property owners, and Empire Wind, with a demonstrated interest in the affected historic properties and held 5 consulting party meetings.[38] Through that consultation, BOEM identified historic properties that may be adversely affected by activities resulting from COP approval, as well as measures to resolve those adverse effects. BOEM also identified 3 NHLs that may be visually adversely affected by activities resulting from COP approval and followed the requirements for compliance with NHPA Section 110(f). On November 20, 2023, an MOA was executed stipulating how the adverse effects of the Projects on historic properties will be resolved. As discussed in section 3.3, BOEM also conducted G2G consultation meetings with tribes in which potential impacts to the environment and archeological resources were discussed.

The COP proposed impact avoidance, minimization, and mitigation measures, which BOEM included as elements of the Projects in its environmental analysis and consultations. Measures proposed by Empire Wind can be found in Volume II, Section 1.1 of the COP and include measures to avoid, minimize, and mitigate impacts to resources such as air quality, birds, and bats, among others.[39] As described in the Record of Decision, BOEM will incorporate Empire Wind's proposed measures as COP conditions of approval and require Empire Wind to comply with all measures and commitments resulting from consultations.

BOEM's Preferred Alternative also includes mitigation and monitoring measures to avoid or reduce impacts on existing ocean uses and on environmental and socioeconomic resources associated with construction, operation, and maintenance activities across the various resources analyzed in the Final EIS. Appendix H of the Final EIS contains a comprehensive list of mitigation and monitoring measures, which are analyzed in the respective Chapter 3 resource section.

4.4 Prevention of Waste and Conservation of Natural Resources[40]

Natural resources are defined in 30 C.F.R. § 585.113 to "include, without limiting the generality thereof, renewable energy, oil, gas, and all other minerals (as defined in Section 2(q) of the OCSLA), and marine animal and marine plant life." In this Section 4.4 analysis, BOEM is focused on the prevention of waste and the conservation of natural resources only in the context of *wind energy resources, oil and gas, and marine minerals*. While reviewing this COP, BOEM considered how the Projects would prevent waste by considering the location, installation, and operation of wind energy facilities proposed in the COP. Discussion of the conservation of

[38] The list of those parties accepting participation and declining to participate by either written response or no response to direct invitations are listed in Attachment 2 of the Section 106 MOA.
[39] COP Vol. II, Section 1.1; Empire Wind COP (May 2022), https://www.boem.gov/renewable-energy/state-activities/empire-wind-construction-and-operations-plan
[40] *See* 43 U.S.C. §§ 1337(p)(4)(C) -(D); 30 C.F.R. §§ 585.102(a)(3)-(4), 585.105(a).

marine animal and plant life can be found in Sections 2.1 and 2.2 of the Ocean Wind 1 COP and the Final EIS, Chapter 3, Affected Environment and Environmental Consequences, both of which consider how BOEM addresses the Projects' impacts on the marine environment. For similar reasons, BOEM has determined that the Projects conserve natural marine animal and plant life consistent with 43 U.S.C. § 1337(p)(4)(B), 30 C.F.R. §§ 585.102(a)(2), and 585.621(d). See Section 4.3, above.

Lease OCS-A 0512 was the result of a comprehensive planning process, as discussed in Section 1.1 and Appendix A of the Final EIS. The multiple stages of the planning process evaluated natural resources in the region and removed from consideration areas that would be incompatible with renewable energy activities covered by Lease OCS-A 0512. The analysis conducted in Section 3.17 of the Final EIS concluded that the Projects would result in negligible impacts on non-energy marine minerals (primarily sand and gravel) because the Projects would avoid mineral leases, sand and gravel leases and borrow areas, and ocean disposal areas. There are no existing oil gas leases in the Atlantic at this time and the Atlantic is no longer under consideration for leasing in BOEM's ongoing process to develop the next national OCS oil and gas leasing program (per the final proposed program, announced on September 29, 2023).[41] There is no evidence that the Projects will waste oil, gas, or other mineral resources.

The proposed COP reflects current industry practices (e.g., equipment, design, and orientation) for the Project Area. The mitigation measures to be adopted with the Preferred Alternative's selection strike a rational balance between deconflicting OCS uses and maximizing wind energy harvesting in the proposed Project Area.

4.5 Coordination with Relevant Federal Agencies[42]

Throughout BOEM's regulatory process, BOEM engaged with relevant federal agencies to obtain expert advice, comply with regulatory requirements, and ensure proper coordination. Documentation of this coordination with federal agencies through BOEM's Intergovernmental Renewable Energy Task Force meetings, and public meetings from the early pre-lease planning stages to the Area Identification process (which resulted in the WEAs before modification at the Proposed Sale Notice stage) can be found in Section 1.6 of the New York EA[43] and on BOEM's website.[44] Throughout the environmental and technical review of the COP, BOEM met with various federal agencies, including BSEE, DoD, EPA, USACE, USFWS, NOAA-NMFS, NPS, and USCG. Through the NOI to prepare the EIS, BOEM invited federal agencies with jurisdiction and/or special expertise to become Cooperating or Participating Agencies. BOEM provided Cooperating Agencies with the preliminary Draft EIS on February 14, 2022, for review and comment. BOEM considered and addressed agency comments received, and provided a

---

[41] *See* https://www.doi.gov/pressreleases/interior-department-invites-public-comment-proposed-five-year-program-offshore-oil-0

[42] Throughout the COP review and approval process, DOI engaged in meaningful consultation with federally-recognized Tribes. For more detail see Final EIS Appendix A, Section A.2.2.3 and Appendix N. See also 43 U.S.C. § 1337(p)(4)(E); 30 C.F.R. § 585.102(a)(5).

[43] BOEM, OCS EIS/EA BOEM 2016-042, Commercial Wind Lease Issuance and Site Assessment Activities on the Atlantic Outer Continental Shelf Offshore New York (2016). https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/NY/NY-Public-EA-June-2016.pdf

[44] https://www.boem.gov/renewable-energy/state-activities/new-york-activities

revised preliminary Draft EIS with a request that Cooperating and Participating agencies confirm that their comments were adequately addressed. On November 18, 2022, BOEM published the Draft EIS. The Cooperating Agencies also supported preparation of the Final EIS. BOEM provided Cooperating Agencies with the preliminary Final EIS on May 24, 2023, for review and comment. Before publishing the Final EIS, BOEM considered and addressed comments received, and provided a revised preliminary Final EIS with a request that Cooperating Agencies confirm that their comments were adequately addressed. During the EIS process, BOEM met with all the Cooperating and Participating agencies eight times (November 18, 2020, May 13, 2021, May 21, 2021, June 7, 2021, August 19, 2021, November 3, 2021, May 16, 2022, and April 12, 2023), met with agencies individually on multiple occasions, and hosted two sets of three public meetings (scoping and Draft EIS). NOAA has indicated its intention to adopt the Final EIS and sign a joint ROD with BOEM, and USACE has indicated its intention to adopt the Final EIS and sign a separate ROD concurrent with the issuance of its permit.

4.6 Protection of National Security Interests of the United States[45]

At each stage of the regulatory process involving Lease OCS-A 0512, BOEM has consulted with DoD for the purposes of assessing national security considerations in its decision-making processes. The Call Area was identified through consultation with BOEM's New York Renewable Energy Task Force, which include federal, state, and tribal government partners, including DoD, USCG, and the State of New York. Furthermore, BOEM consulted with DoD on the EA,[46] which examined the potential environmental effects of issuing commercial wind energy leases and approving site assessment activities, as well as potential impacts to military activities in the New York WEA. Following BOEM's consultation with DoD on the proposed action to issue leases in the entire WEA, DoD concluded that site-specific stipulations, designed in consultation with DoD, could mitigate the impact of site characterization surveys and the installation, operation, and decommissioning of meteorological towers and buoys on DoD testing, training, and operations in the WEA. When addressed through coordination with the DoD, impacts would be negligible and avoidable.

While reviewing the COP, BOEM coordinated with DoD to develop measures necessary to safeguard against potential liabilities and impacts on DoD activities. BOEM requested that the Military Aviation and Installation Assurance Siting Clearinghouse (DoD Clearinghouse) coordinate within the DoD a review of the COP. As a result of this review, DoD identified potential impacts on the North American Aerospace Defense Command (NORAD) and the Department of the Navy (DON).

DoD provided the following measures to mitigate potential impacts to NORAD:

- The Project owner will notify NORAD 30-60 days prior to Project completion and again when the Projects are complete and operational for Radar Adverse Impact Management (RAM) scheduling.

---

[45] *See* 43 U.S.C. § 1337(p)(4)(F); 30 C.F.R. §§ 585.102(a)(6), 585.621(c).

[46] https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/NY/NY-Public-EA-June-2016.pdf

- The Project owner will contribute funds ($80,000 per impacted radar) toward the execution of the RAM.

- Curtailment for National Security or Defense Purposes as described in the leasing agreement.

The DON also requested the ability to coordinate material vendor and foreign visitor reviews to protect defense capabilities from compromise and exploitation by foreign actors. DON also requested to be included in coordination on any proposal to utilize distributed acoustic sensing as part of the wind energy project or associated transmission cables.

To protect the security interests of the United States, BOEM has included the measures identified in communications with DoD as conditions of approval in Appendix A of the ROD.

The Lessee's lease also includes a provision allowing for BOEM to suspend operations in accordance with Suspension of Operations for National Security or Defense Purposes as described in Section 3c of Lease OCS-A 0512.[47]

4.7 Protection of the Rights of Other Authorized Users of the OCS[48]

BOEM must ensure that activities described in the COP provide for protection of the rights of other authorized users of the OCS. "Authorized users of the OCS" means other users authorized by BOEM to conduct OCS activities pursuant to any OCS lease, easement, or grant, including those authorized for renewable energy, oil and gas, and marine minerals.[49] BOEM's regulatory authority allows the agency to protect the rights of other authorized users by virtue of its right to determine the location of leases, easements, and grants issued and, thereafter, to approve, disapprove, or require modification of plans to conduct activities on such leases, easements, and grants. Approval of the Preferred Alternative, including the project easement, will not result in adverse impacts to rights granted by BOEM pursuant to any other OCS lease or grant, including leases or grants for renewable energy, oil and gas, or marine minerals. The activities that would be authorized by the COP do not restrict equitable access and sharing of the seabed in a manner that significantly interferes with those parties' authorized uses.

Specifically, there are no nearby oil and gas leases or grants or deposits of sand, gravel, and shell resources subject to 43 U.S.C. § 1337(k)(2) (OCSLA) that would be affected by the activities proposed in the COP. On May 1, 2022, commercial renewable energy Lease OCS-A 0544 bordering the Empire Wind Lease Area along the southeast border became effective. Section 8 of Addendum C of Lease-A 0544 states that the:

> *"Lessee's (OCS-A 0544) proposed project design… must endeavor to design a surface structure layout that contains two common lines of orientation between OCS-A 0512 and OCS-A 0544 (as described in Navigation and Vessel Inspection Circular 01-19). If the*

[47] Commercial Wind Lease OCS-A 0512, https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/NY/OCS-A-0512-Lease.pdf
[48] *See* 43 U.S.C. § 1337(p)(4)(G); 30 C.F.R. § 585.102(a)(7).
[49] BOEM's Marine Minerals Program manages Outer Continental Shelf mineral leasing (primarily sand and gravel) for coastal restoration, and commercial leasing of gold, manganese, and other hard minerals.

> *Lessee and the neighboring BOEM lessee (i.e., the lessee for OCS-A 0512) cannot agree on such a surface structure layout, the OCS-A 0544 Lessee must incorporate a 2-nmi setback from the boundary of the neighboring lease, within which the OCS-A 0544 Lessee must not construct any surface structures."*[50]

The Proposed Action in the COP includes several turbine locations located on the border of the lease that would result in portions of the rotor swept area that results in blade overhang outside of the Lease Area. In addition, the proximity of the turbines to the boundary of the lease area could necessitate temporary placement of equipment outside the lease area for construction or maintenance of the turbines or permanent installation of an interarray cable. In a joint communication, Empire Wind and the holder of the adjoining lease (OCS-A 0544) informed BOEM that the holder of the adjoining lease does not plan to locate WTGs in proximity to the Empire Wind WTGs overhanging its lease. Still, BOEM recognizes that the overhang of Empire Wind's WTGs on another lessee's lease could impact the full enjoyment of the neighboring lease, by possibly creating the need to temporarily locate repair and maintenance equipment in such other lease due to safety considerations. Therefore, to mitigate that potential issue, BOEM has included a condition of COP approval that requires a Repair and Maintenance Agreement between Empire Wind and the neighboring Lessee (OCS-A 0544) prior to the date that activities which would be located on the adjoining lease are scheduled to commence.[51] Inclusion of this condition of COP approval also prevents unreasonable interference with the use of the OCS by the adjoining lessee.[52] Moreover, BOEM has included a condition of approval that requires Empire Wind to specifically notify BSEE and BOEM of the temporary placement of any equipment outside the lease and provides that BSEE will review such activity in coordination with BOEM. That condition also provides that the any placement of equipment outside the lease must be within the area that was analyzed in BOEM's review of the COP.

4.8 A Fair Return to the United States[53]

BOEM has determined that the high bid resulting from the lease auction and terms of the lease provide a fair return to the United States. As described in Section 2.2, BOEM auctioned the New York WEA on November 15 and 16, 2016. The Lease Area, referred to as OCS-A 0512, consists of 79,350 acres located 11.5 nautical miles (nm) from Jones Beach, NY.

Prior to holding the lease sale, BOEM determined that the minimum bid for these Lease Areas constituted a fair return to the United States. As published in the *Federal Register* notice[54] for this lease sale, the minimum bid for the New York Lease Area was $2 per acre, or $158,700.00.[55] Statoil Wind US LLC's winning monetary bid vastly exceeded these minimum bids at $535.22 per acre and thereby exceeded fair return for the United States on that basis alone.

---

[50] Commercial Wind Lease OCS-A 0544. https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Lease%20OCS-A%200544.pdf

[51] See Proposed Condition 1.10, Appendix A to the ROD.

[52] For a complete discussion on preventing unreasonable interference with other OCS uses, see section 4.9.

[53] *See* 43 U.S.C. § 1337(p)(4)(H); 30 C.F.R. § 585.102(a)(8).

[54] 81 FR 75429, October 31, 2016. https://www.federalregister.gov/documents/2016/10/31/2016-26240/atlantic-wind-lease-sale-6-atlw-6-for-commercial-leasing-for-wind-power-on-the-outer-continental

[55] https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/Bid-Summary-ATLW-6.pdf

Lease payments are enumerated in Lease OCS-A 0512, Addendum B and describe annual rent payment requirements that are calculated per acre or fraction thereof. Rental payments compensate the public for lease development rights and serve as an incentive to timely develop the lease during the period before operations. According to the assignment and segregation letter, this annual rent after assignment is $238,050.00. Once a project begins commercial generation of electricity, a lessee must pay an operating fee, calculated in accordance with the formula found in Addendum B of Lease OCS-A-0512 and BOEM's regulations.[56] The operating fee compensates the public for offshore wind development on OCS submerged lands and the associated electricity generated and sold. Upon COP approval, and annually thereafter, Empire Wind would be required to submit its first project easement rent payment, calculated based on the acreage of the easement and the formula provided at 30 C.F.R. § 585.500(c)(5) and Addendum D of Commercial Lease OCS-A 0512.

4.9 Prevention of Interference with Reasonable Uses of the OCS, the Exclusive Economic Zone, the High Seas, and the Territorial Seas; Does Not Unreasonably Interfere with Other Uses of the OCS, Including National Security and Defense[57]

Under OCSLA and its implementing regulations, the Secretary ensures that any authorized activities are carried out in a manner that provides for the prevention of interference with reasonable uses (as determined by the Secretary) of the Exclusive Economic Zone, the high seas, and the territorial seas;[58] and that activities authorized by the Secretary will "not unreasonably interfere with other uses of the OCS."[59]

Throughout the planning and leasing process for Lease OCS-A 0512, as well as the NEPA process for the COP review, BOEM considered numerous other OCS uses in order to minimize or eliminate interference. To develop the New York WEA, BOEM worked closely with the New York Intergovernmental Task Force, federal agencies, federally recognized Tribes, the public, and other stakeholders between 2010 and December 2016.

As described in Section 2.0, BOEM initiated the planning process for the area in question in response to an unsolicited lease application from the NYPA. BOEM solicited input regarding the Project Area throughout the leasing process and removed an area overlapping Cholera Bank in direct response to comments from NMFS concerning habitat use conflicts. Before lease issuance, BOEM removed areas to strike a rational balance between identifying an area suitable for wind energy development and preventing interference with other reasonable uses of the OCS.

During the NEPA process for the COP, BOEM assessed alternatives and mitigation measures that could further avoid, minimize, or mitigate impacts to other OCS uses, including sealanes and navigation, aviation, fishing activities, and NOAA scientific research and surveys. The

---

[56] *See* 30 C.F.R. § 585.506.
[57] *See* 43 U.S.C. § 1337(p)(4)(I); 30 C.F.R. §§ 585.102(a)(9), 585.621(c). It is worth noting that approval of a COP would not restrict the legal rights of others to conduct reasonable uses of the Exclusive Economic Zone, the high seas, and the territorial sea (e.g., innocent passage, fishing).
[58] *See* 43 U.S.C. § 1337(p)(4)(I); 30 C.F.R. § 585.102(a)(9).
[59] *See* 30 C.F.R. § 585.621(c).

discussion below summarizes how BOEM considered these other OCS uses in the Lease Area[60] and the actions taken to ensure that the proposed activities, if approved, would be carried out in a manner that provides for the prevention of unreasonable interference with those uses.

- **Navigation and Vessel Traffic**[61]

  The Lease Area is just outside the largest port on the East Coast (in terms of containerized cargo volume) (Port Authority of New York and New Jersey). Vessel traffic within the area consists of vessels making the transition between the Ambrose or Sandy Hook channels into and out of the Port of New York and New Jersey. The regional setting is dominated by this commerce hub that consists of the Port of New York and New Jersey with facilities along Staten Island, Brooklyn, Manhattan, Hudson, and Newark. The Hudson River gives access to and from the New York Bight from the Port of Albany, Port of Coeymans (Ravena), Kingston, and Yonkers, New York, among numerous other commercial and small craft facilities. The coastal New York Bight waters are also used for commercial fisheries and recreational uses. The Lease Area is bordered by two of the six traffic lanes (Ambrose to Nantucket and Hudson Canyon to Ambrose) guiding large vessel traffic into and from the Port of New York and New Jersey area. On January 3, 2022, the USCG published the final Northern New York Bight Port Access Route Study (NNYBPARS) on the Federal Registry. Recommendations from the NNYBPARS included extending the two traffic lanes Ambrose to Nantucket and Hudson Canyon to Ambrose.

  The Navigation Safety Risk Assessment for the Projects show they are technically feasible to navigate through. The Projects will maintain a minimum spacing of 0.65nm (nautical mile), with a line of turbines oriented north – south, as well as perimeter rows on the northern and southern boundaries of the Lease Area that parallel the existing Traffic Separation Scheme (TSS). The rows will also be oriented southeast to northwest to accommodate the predominant trawling direction of commercial fishing industry; however, these rows contain several instances of deviation due to the irregular shape of the Lease Area. Empire Offshore Wind, LLC, consulted with USCG to ensure the layout will meet the requirement for navigation safety, and search and rescue (SAR) operation for the Project Area.

  While there are no restrictions on navigation in the Project area, vessels would need to navigate with greater caution. Navigation within the Lease Area would be aided by marked and lit WTGs and Offshore Substations. Empire Wind would ensure proper marking, lighting, and signaling of Private Aids to Navigation (PATON) pursuant to USCG requirements and BOEM[62] guidelines.

---

[60] Here, BOEM intends the "Lease Area" to encompass both the existing lease boundaries and the requested project easement. As discussed above in section 4.7, the COP includes several turbine locations located on the border of the lease that would result in portions of the rotor swept area that results in blade overhang outside of the Lease Area. BOEM considered this in the analysis described in this section, and in particular, BOEM examined how the overhang may impact other uses, particularly navigation, and concluded that the air gap between the bottom of the rotor swept zone and average sea surface height allows safe vessel transit.

[61] *See* Final EIS. https://www.boem.gov/renewable-energy/state-activities/empire-wind-final-eis

[62] BOEM, OREP, Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Dev. (2021), https://www.boem.gov/sites/default/files/documents/renewable-energy/2021-Lighting-and-Marking-Guidelines.pdf.

As described in the FEIS, Empire Wind committed to continuing stakeholder engagement and public outreach with, but not limited to, federal, state, tribal, and local officials; non-governmental organizations; fishermen; shipping organizations; and other stakeholders. Empire Wind will communicate project updates to minimize impacts to mariners.[63] As indicated in anticipated conditions of approval, Empire Wind must: (1) obtain USCG approval for PATON to be installed; and (2) coordinate with USCG District 1 so, that to the extent possible, the FDR is consistent with the recommendations provided in the marking and lighting guidelines published by USCG District 1.[64]

As part of the FEIS, BOEM examined the existing port facilities in the region. There are no ports covered by the Deepwater Ports Act that are under consideration for the Projects. In addition to the consideration of navigation and vessel traffic, BOEM also examined potential project impacts on aviation and air traffic and determined that air traffic is expected to continue at current levels in and around the Projects.

- **Commercial Fisheries and For-Hire Recreational Fishing**[65]

Federally permitted fishing occurs in the Lease Area. NMFS has issued permits for approximately 4,300 vessels that are currently engaged in various commercial and for-hire recreational fisheries in the Northeast Region (Maine to Virginia). Of these federally permitted vessels, an average of 345 vessels per year over 14 years (approximately 8.0 percent of the total number of vessels in the region) have reported fishing in the Lease Area.[66] Of these 345 vessels, NMFS data from 2008 to 2021 show that most permits source less than 0.25 percent of their annual revenue from the Lease Area.[67] Although a few outlier vessels derived a higher proportion of their annual revenue from the Lease Area in comparison to other vessels fishing in the Lease Area, the revenue for most of these outliers was below 5 percent of their annual revenue. The Final EIS found that the alternative selected in the ROD would result in moderate to major adverse impacts to commercial fisheries and minor to moderate adverse impacts on for-hire recreational fishing, depending on the fishery or fishing operation. Minor beneficial impacts for some for-hire recreational fishing operations could also occur. The Final EIS states that future planned actions, including future offshore wind approvals, could result in moderate to major adverse impacts to commercial fisheries and for-hire recreational fishing, depending on the fishery or fishing operation. The offshore wind-related factors that contributed to these impact determinations were primarily the presence of structures and the resulting navigational hazards and space-use conflicts.

It is important to clarify that approval of the Projects would not limit the right to navigate or fish within the Project Area. That said, some Project activities and components (e.g., foundations, cable protection measures) are expected to impact some types of fishing within

---

[63] *See* COP Navigation Safety Risk Assessment, Appendix DD. https://www.boem.gov/sites/default/files/documents/renewable-energy/Public_EOW_COP_App%20DD.pdf
[64] https://www.navcen.uscg.gov/sites/default/files/pdf/lnms/LNM01312023.pdf
[65] *See* Final EIS. https://www.boem.gov/renewable-energy/state-activities/empire-wind-final-eis
[66] *Id.*
[67] *Id.*

the Project Area.[68] For example, temporary safety zones may be established in coordination with the USCG around active construction. During this time, all fishing and transit would need to avoid the safety zone. During the operational period, fishing and transit would be permitted; however, some larger vessel size classes and/or vessels towing fishing gear may choose to avoid the Project Area due to operational concerns. It is anticipated that vessel operators that choose to avoid the area will fish or transit in other locations. Static gear fishing including hook and line, lobster and crab traps, and gillnets are not anticipated to have the same operational constraints as mobile gear fishing, although fishing methodology (e.g., direction of setting the gear and/or length of set gear) may need to be adjusted for fishing within the Project Area.

While BOEM expects that, with time, many fishermen will adapt to the spacing and be able to fish successfully in the Project Area,[69] the Lessee has identified ways to reduce the level of interference that the Projects would have with commercial fisheries.[70] For instance, most WTGs would be placed in a grid-like array within the Lease Area, with minimum spacing of no less than 0.65 nm between WTGs in a north-south orientation. The rows will also be oriented southeast to northwest to accommodate the predominant trawling direction of commercial fishing. However, some rows contain several instances of deviation due to the irregular shape of the Lease Area. The USCG has determined that the layout will meet the requirement for navigation safety and SAR operation for the Project Area.

BOEM is including as conditions two fisheries mitigation programs which consist of a gear claim procedure under which requests for reimbursement related to lost and/or damaged gear would be processed and a Direct Compensation Program for reimbursement of lost revenues. The Direct Compensation Program must include losses to shoreside business and requires Empire Wind to conduct a shoreside seafood business analysis that would be used to further supplement funds available for settling claims of lost revenue as a result of the Projects. The Direct Compensation Fund includes a reserve amount to be used to pay claims brought by both commercial and for-hire fishermen according to BOEM's *Guidelines for Mitigating Impacts to Commercial and Recreational Fisheries on the Outer Continental Shelf Pursuant to 30 C.F.R. Part 585* (BOEM's Mitigation Guidance)[71] and must be based on the annual average commercial fisheries landings values and for-hire fishing revenue stated in the Final EIS (Tables 3.9-12 and 3.9-20). The reserve amount must be determined by the formula specified in the conditions of approval. The reserve amount will be augmented to pay claims in amounts determined through an analysis of impacts of the Projects to shoreside support services. Including all the measures described above would mitigate impacts that the Projects are expected to have on commercial fisheries and for-hire fisherman and will prevent unreasonable interference with said fishing interests.

---

[68] *Id.*

[69] *Id.*

[70] *See* Final EIS, App. H. https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Empire_Wind_FEIS_App_H_Mitigation%26amp%3BMonitoring_0.pdf

[71] See https://www.boem.gov/sites/default/files/documents/renewable-energy/DRAFT%20Fisheries%20Mitigation%20Guidance%2006232022_0.pdf#:~:text=As%20reflected%20in%20the%20Guidelines,prior%20to%20engaging%20in%20any June 23, 2022.

The area known as Cholera Bank has changed over time as fishery resources and fishing behavior have changed. Originally (circa 1832), Cholera Bank was just to the west of the Lease Area. However, more recently other parts of the bank have been referred to as Cholera Bank. Located on the same submarine reef are two grounds west of Cholera—Middle Ground, and Angler Bank—and one to the east, appropriately called East of Cholera. During the process leading up to lease issuance in 2016, BOEM removed the contiguous area around the 19 m depth contour sloping down to 24 m at approximately 1 percent grade consisting of gravel and coarse sand. The removal was based upon BOEM's EFH consultation with NMFS. NMFS determined that the Cholera Bank feature was a sensitive habitat to be avoided for the placement of site assessment structures. In addition to avoiding sensitive habitats, removal of the area also reduced potential conflict with recreational and commercial fishing activity.

- **Scenic and Visual**

  During the lease sale process, BOEM worked to produce visual simulations of a hypothetical project within the Call Area. After Empire Wind submitted its COP, BOEM conducted a thorough analysis of the impacts of the Proposed Action on visual and scenic resources. The geographic analysis area (GAA) for the Empire Wind Projects was established from a computer-generated terrain elevation and surface cover viewshed model and encompasses a 44-mile radius Zone of Theoretical Visibility (ZTV) around the Project Area. A quantified inventory of the physical elements and features and the aesthetic, perceptual, and experiential aspects of the visual and scenic resources was conducted and analyzed for impacts to the ocean, seascape, and landscape character areas within the ZTV along the Fire Island, Manhattan Island, and southern Long Island coastlines in the State of New York and Northern New Jersey coastlines.

  Fifteen key observation points (KOP) in New York and New Jersey were selected from the affected areas defined in the computer-generated viewshed model. Ten photo simulations and 5 video simulations were produced showing the views from the KOPs and depicting the potential changes to the existing visual setting by the Projects' proposed components. The distance from the KOPs to the closest wind turbine ranges from 14 miles to 34 miles. The level of impact ranges from major at 14 miles away to minor at 32 miles away when viewing at the ground level. The impact level increases when viewing from elevated KOPs to moderate when viewing at a distance of 34 miles (Empire State Building), and major when at a distance of approximately 22 miles (Fire Island Lighthouse).

  Aviation warning lighting affixed to the wind turbines would be potentially visible as far as 40 miles from beaches and coastlines within the GAA with impacts on scenic and visual resources. Nighttime impacts would be reduced by implementing an aviation detection lighting system (ADLS) on WTGs and offshore substations. The aviation warning lights would remain off until low flying aircraft enter the obstruction zone and are detected by surveillance radar, at which time the warning lights would activate. A report by Capitol Airspace Group estimated that with an ADLS system in place, the aviation warning lights would activate for a total of 357 hours, 46 minutes, and 45 seconds over a one-year period, or activated 7.5 percent of the time that traditional obstruction lights would be active.

A 4-mi (6.4-km) Visual Onshore Study Area was used to review potential visibility from 15 onshore KOPs of each of the 5 potential onshore substations, onshore export and interconnection cables, and Operations and Maintenance Base. The onshore components would be sited in highly developed and previously disturbed areas where it is feasible to introduce less visual contrast relative to the surroundings. Impacts range from minor at 10 KOPs to moderate at 3 KOPs, and major at 4 KOPs when considering the location of the sites relative to scenic resources and public viewpoints, context of the sites and surrounding land uses, visual contrast and prominence between the onshore substations, and the surrounding landscape. Some impacts will be mitigated with vegetative screening at the onshore substation sites to screen views from nearby residents.

Populations affected by the offshore and onshore actions include tourists visiting and residents living in coastal communities, including low income and minority neighborhoods; recreational users of the seascape, including those using ocean beaches and tidal areas; recreational users of the open ocean, including those involved in yachting, fishing, boating, and passage on ships; recreational users of the landscape, including those using landward beaches, golf courses, cycle routes, and footpaths; tourists, workers, visitors, or local people using transport routes; people working in the countryside, commerce, or dwellings; and people working in the marine environment, such as those on fishing vessels and crews of ships.

In coordination with BOEM, the lessee must prepare and implement a scenic and visual resource monitoring plan that monitors and compares the visual effects of the wind farm during construction and O&M (daytime and nighttime) to the findings in the COP Visual Impact Assessment and verifies the accuracy of the visual simulations (photo and video). The monitoring plan shall include monitoring and documenting the meteorological influences on actual WTG visibility over a duration of time from selected onshore key observation points, as determined by BOEM and the Lessee. In addition, the Lessee must include monitoring of the ADLS operation in the monitoring plan. The Lessee shall monitor the frequency that the ADLS is operative, documenting when (dates and time) the aviation warning lights are in the on position and the duration of each event. Details for monitoring and reporting procedures must be included in the plan (see ROD Appendix A 7.2)

- **NOAA Scientific Research and Surveys**[72]

  As described in Section 3.17.1 of the Final EIS, the Lease Area overlaps with current fisheries management, protected species, and ecosystem monitoring surveys conducted by or in coordination with NOAA's Northeast Fisheries Science Center. NOAA Fisheries and BOEM have developed the *NOAA Fisheries and BOEM Federal Survey Mitigation Implementation Strategy - Northeast US Region* (Hare et al. 2022)[73] to address these adverse

[72] *See* Final EIS, Section 3.17. https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Empire_Wind_FEIS_Vol1_0.pdf

[73] *See* Hare, J.A., Blythe, B.J., Ford, K.H., Godfrey-McKee, S., Hooker, B.R., Jensen, B.M., Lipsky, A., Nachman, C., Pfeiffer, L., Rasser, M. and Renshaw, K., 2022. NOAA Fisheries and BOEM Federal Survey Mitigation Implementation Strategy - Northeast US Region. NOAA Technical Memorandum 292. Woods Hole, MA. 33 pp.

impacts. As described in Section 13.17.5, the Projects will have major adverse impacts on NMFS scientific surveys.

There are 14 NMFS scientific surveys that overlap with wind energy development in the northeast region. Nine of these surveys overlap with the Projects. BOEM is including Term and Condition 6.4 in ROD Appendix A to address this issue. Consistent with NMFS and BOEM Survey Mitigation strategy actions 1.3.1, 1.3.2, 2.1.1, and 2.1.2 in the *NOAA Fisheries and BOEM Federal Survey Mitigation Implementation Strategy - Northeast US Region*, the Lessee must submit to BOEM a survey mitigation agreement between NMFS and the Lessee. The survey mitigation agreement must describe how the Lessee will mitigate the Projects' impacts on the 9 NMFS surveys. The Lessee must conduct activities in accordance with such agreement. If the Lessee and NMFS fail to reach a survey mitigation agreement, then the Lessee must submit a survey mitigation plan to BOEM.

- **National Security and Defense**

  As explained in Section 4.6, BOEM has consulted extensively with the DoD. BOEM will include any mitigation measures identified during the consultations as part of the COP approval.

4.10 Consideration of (i) the Location of, and any Schedule Relating to, a Lease or Grant under this Part for an Area of the OCS, and (ii) any Other Use of the Sea or Seabed, Including Use for a Fishery, a Sealane, a Potential Site of a Deepwater Port, Navigation[74]

For a discussion on how BOEM selected the Lease Area, see Section 2.1. For a discussion on how BOEM considered potential conflicts with fisheries, sealanes, deepwater ports, navigation, and aviation, see Section 4.9.

4.11 Public Notice and Comment on any Proposal Submitted for a Lease or Easement[75]

For a detailed discussion on public notice and comment opportunities associated with the issuance of the lease, please see Section 1 and Appendix A of the Final EIS[76] and Section 5.1 of the New York EA.[77]

Before preparing the Draft EIS, BOEM held three virtual public scoping meetings (on June 30, July 8, and July 13, 2021) to solicit feedback and to identify issues and potential alternatives for consideration. The topics most referenced in the scoping comments included birds, commercial fisheries and for-hire recreational fishing, NEPA/public involvement, planned activities scenario/cumulative impacts, and mitigation and monitoring.[78] The Scoping Summary Report was made available to the public on BOEM's website, and all public scoping submissions

---

[74] *See* 43 U.S.C. § 1337(p)(4)(J); 30 C.F.R. § 585.102(a)(10).
[75] *See* 43 U.S.C. § 1337(p)(4)(K); 30 C.F.R. § 585.102(a)(11).
[76] *See* Final EIS. https://www.boem.gov/renewable-energy/state-activities/empire-wind-final-eis
[77] BOEM, OCS EIS/EA BOEM 2016-070, Com. Wind Lease Issuance and Site Assessment Activities on the Atl. Outer Continental Shelf Offshore New York. (2016), https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/NY/NY_Revised_EA_FONSI.pdf
[78] https://www.boem.gov/renewable-energy/state-activities/scopingreportempire-wind-farm-project

received can be viewed online at http://www.regulations.gov under Docket Number BOEM-2022-0038.

On November 18, 2022, BOEM published an NOA for the Draft EIS in the *Federal Register* consistent with the regulations implementing NEPA to assess the potential impacts of the Proposed Action and alternatives.[79] The Draft EIS was made available to the public on BOEM's website. The NOA commenced the public review and comment period of the Draft EIS. BOEM held three virtual public hearings (on December 7, 13, and 15, 2022) to solicit feedback and identify issues for consideration in preparing the Final EIS. Throughout the public review and comment period, federal agencies; tribal, state, and local governments; and the general public had the opportunity to provide comments on the Draft EIS. The topics most referenced during the Draft EIS comment period included air quality, climate change, commercial fisheries and for-hire recreational fishing, demographics, employment and economics, marine mammals, and scenic and visual resources. All Draft EIS comment submissions received can be viewed online at http://www.regulations.gov under Docket Number BOEM-2022-0053.

On September 15, 2023, BOEM published an NOA for the Final EIS in the *Federal Register*.[80] The Final EIS was also made available in electronic form at https://www.boem.gov/renewable-energy/state-activities/empire-wind. BOEM's 30-day waiting period for the Final EIS closed on October 16, 2023. BOEM's responses to comments on the Draft EIS are included in Appendix P of the Final EIS.

4.12 Oversight, Inspection, Research, Monitoring, and Enforcement Relating to a Lease, Easement, or Right-of-Way[81]

Secretarial Order 3299, which established BOEM and BSEE, assigned safety and environmental oversight for the OCS renewable energy program to BOEM until such time as the Assistant Secretary - Land and Minerals Management (ASLM) determined that an increase in activity justified the transfer of those functions to BSEE. In December 2020, the Principal Deputy Assistant Secretary - Land and Minerals Management, acting with the authority of the ASLM, directed the transfer of safety and environmental oversight for the OCS renewable energy program from BOEM to BSEE due to increased wind energy activity.[82] On September 14, 2022, DOI delegated relevant authorities to BSEE and BOEM in Departmental Manual Part 219, Chapter 1, and Part 218, Chapter 1, respectively.

On January 31, 2023, DOI published a final rule in the *Federal Register*[83] that moved portions of the existing OCS renewable energy regulations, consistent with the Secretary's order and the Departmental Manual. Following approval of the COP, BSEE maintains the authority to perform

---

[79] https://www.federalregister.gov/documents/2022/11/18/2022-25034/notice-of-availability-of-a-draft-environmental-impact-statement-for-empire-offshore-wind-llcs

[80] https://www.federalregister.gov/documents/2023/09/15/2023-19956/notice-of-availability-of-the-empire-offshore-wind-final-environmental-impact-statement

[81] See 43 U.S.C. § 1337(p)(4)(L); 30 C.F.R. § 585.102(a)(12).

[82] *See* "Memorandum from Principal Deputy Assistant Secretary - Land and Minerals Management on the Department of the Interior's Offshore Renewable Energy Program Roles and Responsibilities," December 22, 2020.

[83] *See* 88 Fed. Reg. 6376 (Jan. 31, 2023). https://www.federalregister.gov/documents/2023/01/31/2023-00871/reorganization-of-title-30-renewable-energy-and-alternate-uses-of-existing-facilities-on-the-outer

oversight, inspection, research, monitoring, and enforcement relating to Lease OCS-A 0512, as authorized under the lease, OCSLA, and its implementing regulations. BOEM still retains its authority for enforcing compliance, including safety and environmental compliance, with all applicable laws, regulations, leases, grants, and approved plans through notices of noncompliance, cessation orders, civil penalties, and other appropriate means.

Under this authority BSEE and BOEM will ensure that offshore renewable energy development in Lease OCS-A 0512 is conducted safely and maintains regulatory compliance. BSEE has reviewed the proposed COP and recommended technical conditions for the design, construction, operation, maintenance, and monitoring of the Projects, and for periodic review and reporting. These proposed technical conditions are included in Appendix A of the ROD and are anticipated conditions of COP approval.

5 STATUS OF THE LEASE

Empire Wind is currently in compliance with the terms of Lease OCS-A 0512. Empire Wind maintains the lease in full force and effect by virtue of annual rent payments, all of which have been timely paid.

6 FINANCIAL ASSURANCE

As required by 30 C.F.R. § 585.625(b)(19), Section 1.10 of the COP[84] contains Empire Wind's statement attesting that the activities and facilities proposed in the COP are or will be covered by an appropriate bond or security as required by 30 C.F.R. §§ 585.515 and 585.516. Empire Wind has provided and currently maintains Surety Bond No. SU1116511 in the amount of $100,000 and Surety Bond No. ROG0001791 in the amount of $398,550 to meet the initial lease-specific and SAP supplemental financial assurance requirements on lease OCS-A 0512 to guarantee compliance with all terms and obligations of the lease. BOEM's regulations at 30 C.F.R. § 585.516(a)(3) provide that, before BOEM will approve a COP, the lessee must provide a supplemental bond or other financial assurance in an amount determined by BOEM based on the complexity, number, and location of all facilities in the lessee's planned activities and commercial operation. Empire Wind must provide supplemental financial assurance to cover the additional annual rental amount for the project easement where transmission lines to shore will be located. In addition, BOEM may increase the amount of supplemental financial assurance at any time if BOEM determines it is necessary to guarantee compliance with the terms and conditions of the lease.[85]

7 CONCLUSION

Minimizing environmental impacts and interference with other uses of the OCS is integral to OCS wind energy planning, leasing, and development. Over many years, the United States Government, on behalf of the American people has, through the DOI, BOEM, and other agencies, devoted significant time and resources to identifying, analyzing, and developing

[84] https://www.boem.gov/sites/default/files/documents/renewable-energy/Public_EOW%20COP_v5_Volume%201_Redacted.pdf
[85] *See* 30 C.F.R. § 585.517.

strategies to mitigate potential environmental impacts and interference with other OCS uses. In 2010, OREP established and began meeting with the New York Intergovernmental Renewable Energy Task Force, and with other stakeholders and ocean users, to introduce BOEM and offshore wind. An unsolicited lease request was submitted to BOEM in September of 2011 in support of a 700 MW project. Subsequently, BOEM initiated its planning and analysis process to determine competitive interest in the area and eventually identify a Wind Energy Area and conduct an EA. The EA, and the associated FONSI concluded that reasonably foreseeable environmental effects associated with lease issuance, including those resulting from site characterization surveys in the WEA and the deployment of meteorological towers and/or buoys, would not significantly impact the environment.

In December of 2016, BOEM held a lease sale which led to the issuance of lease OCS-A 0512 to Statoil Wind US LLC, now Empire Offshore Wind LLC. Empire Wind submitted its COP in January of 2020, and BOEM conducted a project-specific NEPA analysis and other environmental consultations required by the ESA, MSA, and NHPA. Throughout its environmental and technical review of the COP, BOEM also coordinated with several federal agencies, including BSEE, DoD, DON, USEPA, USACE, USFWS, NOAA, EPA, NPS, and USCG. All of those reviews, consultations, and coordination efforts enabled BOEM to assess whether approval of the Preferred Alternative conforms with the 8(p)(4) factors and implementing regulations.

As reflected in the Record of Decision for the Projects, the Preferred Alternative, i.e., the combination of Alternative C-1 (Gravesend Anchorage Area), Alternative D (Empire Wind 2 [EW 2] Submarine Export Cable Route Options to Minimize Impacts to the Sand Borrow Area), Alternative F (Wind Resource Optimization with Modifications for Environmental and Technical Considerations), Alternative G (Cable Bridge Crossing of Barnums Channel Adjacent to Long Island Railroad Bridge) and Alternative H (Dredging for Empire Wind 1 [EW 1] Export Cable Landfall)), plus the measures required in the NFMS and Lessee mitigation survey, balance the need to prevent interference with OCS uses with BOEM's duty to further the U.S. policy to make OCS energy resources available for expeditious and orderly development, subject to environmental safeguards, including the consideration of natural resources and existing ocean uses. The FEIS demonstrates that approving the Projects as modified by the Preferred Alternative will have negligible to moderate adverse impacts on most resources and only the potential for major adverse impacts on (i) marine mammals, (ii) scenic and visual resources, (iii) commercial fisheries and for-hire recreational fisheries, and (iv) scientific research. However, the Preferred Alternative could also have beneficial impacts on the following resources: (i) air quality; (ii) benthic resources; (iii) birds; (iv) demographics, employment and economics; (v) land use and costal infrastructure; (vi) recreation and tourism; and (vii) sea turtles.

The numerous consultations performed under various federal statutes, and the analysis in the Final EIS, indicate that approval of the Preferred Alternative would not result in undue harm to environmental resources or in unreasonable interference with other OCS uses.[86]

[86] *See* Final EIS Secs. 4.3 and 4.9. https://www.boem.gov/renewable-energy/state-activities/empire-wind-final-eis

Moreover, approval of the Preferred Alternative would further goals stated in Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*, by increasing renewable energy production on the OCS, "with the goal of doubling offshore wind by 2030 while ensuring robust protection for our lands, waters, and biodiversity and creating good jobs."[87]

In conclusion, OREP has evaluated all the information that Empire Wind provided in its COP and has assessed it in relation to the enumerated factors in OCSLA Subsection 8(p)(4) and BOEM's implementing regulations at 30 C.F.R. part 585. Approval of the COP—as modified by the Preferred Alternative and the proposed Terms and Conditions included with the ROD—would be in accordance with the regulations at 30 C.F.R. part 585 and would ensure that all Project activities on the OCS are carried out in a manner that provides for the factors in Subsection 8(p)(4) of OCSLA.

[87] https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/

Appendix B.1. ETRB Review Memorandum

United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT
WASHINGTON, DC 20240-0001

Memorandum

To: David MacDuffee
Chief, Projects and Coordination Branch

From: Marilyn Sauls
Chief, Engineering and Technical Review Branch

MARILYN SAULS
Digitally signed by MARILYN SAULS
Date: 2023.11.03 14:55:28 -04'00'

Subject: Review of the Empire Wind Offshore Wind Farm Construction and Operations Plan (COP) for Commercial Lease OCS-A 0512

Empire Wind submitted a Construction and Operations Plan (COP) to the Bureau of Ocean Energy Management (BOEM) on January 13, 2020, for lease OCS-A 0512. The COP for the Empire Wind Offshore Wind Farm project proposes the installation of the following major offshore components:

- Up to 147 WTGs;
- Each WTG would be supported by a monopile foundation;
- A network of 66 kV inter-array cables.
- Up to two offshore substations on piled jacket foundations; and
- Up to two 138-345-kV HVAC export cables with target burial depth of 4 to 6 feet (1.2 to 1.8 m).
- The export cables would consist of up to (4) buried submarine high-voltage alternating-current cables.

The Engineering and Technical Review Branch (ETRB) subject matter experts (SME) reviewed the proposed facilities, project design, project activities, and fabrication and installation details in the COP and coordinated with the following agencies:

- The Bureau of Safety and Environmental Enforcement (BSEE), for safety (Safety Management System [SMS]) and Oil Spill Response Plan (OSRP);
- The Federal Aviation Administration (FAA) and National Oceanic and Atmospheric Administration (NOAA), for radar interference; and
- The United States Coast Guard (USCG), for vessel navigation.

The SME comments and the responses from Empire Wind are logged in the COP review matrix on the Office of Renewable Energy Programs' shared drive AEAU: S:\State of New York\Equinor Wind US LLC - OCS-A 0512\COP.

On June 24, 2020, BOEM approved the nomination of DNV to be the Certified Verification Agent for the Empire Wind project, to review and to certify that the facilities would be designed, fabricated, and installed in conformance with accepted engineering practices as described in the Facility Design Report and the Fabrication and Installation Report, pursuant to 30 CFR 585.705.

In review of the COP, ETRB SMEs used their knowledge and experience gained from past project reviews, research funded by BOEM, BSEE, and others, past projects built and operating in Europe, and individual expertise to assess the information provided in the COP. ETRB determined that the technical information and supporting data submitted by Empire Wind meets the requirements of 30 C.F.R § 585.626 and is sufficient to allow the safe installation of the proposed project on the Outer Continental Shelf (OCS), does not unreasonably interfere with other uses of the OCS, and uses properly trained personnel, pursuant to 30 C.F.R. § 585.621(b), (c), and (f).

ETRB expects Empire Wind to use the most current technology available for commercial production that meets or exceeds current industry standards. In some cases, this could include technologies currently in prototyping and/or working toward type certification by a recognized industry standards organization but not yet commercially available. ETRB has determined that the technologies proposed within the Project Design Envelope (PDE) of the COP are the same as those currently being commercial utilized or prototyped around the world and constitute the most current and advanced technologies available. ETRB has determined that the information provided in the COP is sufficient to determine that the Project proposes to use the best available and safest technology pursuant to 30 C.F.R. § 585.621(e) which will meet or exceed the current international industry standards.

ETRB recommends approval of the COP, along with the inclusion of the following terms and conditions (T&C), provided as Appendix A to the Record of Decision (ROD), developed in consultation with BSEE, FAA, NOAA, and USCG. The T&C are derived from the review of the information requirements in BOEM's regulations and the relevant mitigation measures identified in Appendix H of the Final Environmental Impact Statement (FEIS). The table below provides a cross-reference.

#	Terms and Conditions	Regulation	Information Requirement
2.1	Geologic and Geophysical Data	585.626(a)(6)	Overall Site Investigation
2.2	Munitions and Explosives of Concern/Unexploded Ordnance Investigation	§585.627(a)(1)	Hazard information – manmade hazards
2.3	MEC/UXO Identification Survey Report	§585.627(a)(1)	Hazard information – manmade hazards
2.4	MEC/UXO ALARP Certification	§585.627(a)(1)	Hazard information – manmade hazards
2.5	MEC/UXO Discovery Notification	§585.627(a)(1)	Hazard information – manmade hazards

2.6	Munitions Response Plan for Confirmed MEC/UXO	§585.627(a)(1)	Hazard information – manmade hazards
2.7	Munitions Response After Action Report	§585.627(a)(1)	Hazard information – manmade hazards
2.8	Safety Management System	§585.627(d)	Safety Management System
2.9	Emergency Response Plan	§585.626(b)(12)(ii)	Operating procedures – accidents or emergencies
2.10	Oil Spill Response Plan	§585.627(c)	Oil Spill Response Plan
2.11	Cable Routings	§585.626(b)(7)	Cables
2.12	Cable Burial	§585.626(b)(7)	Cables
2.13	Cable Protection Measures	§585.626(b)(7)	Cables
2.14	Crossing Agreements	§585.626(b)(7)	Cables
2.15	Post-Installation Cable Monitoring	§585.626(b)(7)	Cables
2.16	WTG and OSS Foundation Depths	§585.626(a)(4)	Geotechnical survey
2.17	Structural Integrity Monitoring	§585.626(b)(12) §285.824	Operating procedures, self-inspections
2.18	Foundation Scour Protection Monitoring	§585.626(a)(6)	Overall site investigation – scouring of the seabed
2.19	Post-Storm Event Monitoring Plan	§585.627(a)(1)	Hazard information – meteorology, oceanography
2.20	High Frequency Radar Interference Analysis and Mitigation	§585.626(b)(23); FEIS	Other information as required by BOEM
2.21	Critical Safety Systems	§585.626(b)(20);	CVA nomination and reports
2.22	Engineering Drawings	§585.626(b)(20);	CVA nomination and reports
2.23	Construction Status	§585.626(b)(21);	Construction Schedule
2.24	Maintenance Schedule	§585.626(b)(12);	Operating procedures
2.25	Pre-lay Grapnel Run Plan	§585.626(b)(7); §585.626(b)(15)	Cables; Environmental Impacts
3	Navigational and Aviation Safety Conditions	§585.626(b)(23)	Other information as required by BOEM
5.6.3	Boulder Identification and Relocation Plan	§585.627(a)(1); §585.626(b)(15)	Hazard Information-Shallow Geological Hazards; Environmental Impacts