Appendix G: Mitigation and Monitoring

The Draft Programmatic Environmental Impact Statement (PEIS) assesses the potential physical, biological, socioeconomic, and cultural impacts that could result from the construction, operations and maintenance (O&M), and conceptual decommissioning of the six New York Bight (NY Bight) lease areas, as well as the change in those impacts that could result from adopting programmatic avoidance, minimization, mitigation, and monitoring (AMMM) measures. The Proposed Action (Alternative C) for the Draft PEIS is the adoption of programmatic AMMM measures that the Bureau of Ocean Energy Management (BOEM) may require as conditions of approval for activities proposed by lessees in Construction and Operations Plans (COPs) submitted for the six NY Bight lease areas unless the COP-specific National Environmental Policy Act (NEPA) analysis shows that implementation of such measures is not warranted or effective. BOEM may require additional or different measures based on subsequent, site-specific NEPA analysis or the parameters of specific COPs. The AMMM measures analyzed in the Draft PEIS under the Proposed Action are presented in Table G-1. Please note that not all of these AMMM measures are within BOEM's statutory and regulatory authority; those that are not may still be adopted and imposed by other governmental agencies.

BOEM identified the AMMM measures analyzed in the Draft PEIS from review of offshore wind COPs; COP environmental impact statements (EISs); scoping comment letters; input from cooperating and participating agencies, and Cooperating Tribal Governments; and through programmatic consultations under the Endangered Species Act, Magnuson-Stevens Fishery Conservation and Management Act, and the National Historic Preservation Act, as described in Appendix A, *Consultation and Coordination*. BOEM selected AMMM measures that would be applicable to more than one NY Bight lease area, are reasonable and enforceable, and allow for flexibility where appropriate. These AMMM measures are considered programmatic insofar as they may be applied to COPs for the six NY Bight lease areas, not because they necessarily will apply to COPs under BOEM's renewable energy program outside of the NY Bight lease areas.

Several of the AMMM measures included in this appendix have been previously applied as terms and conditions of COP approvals. These measures have a checkmark under the column titled "*Previously Applied as a COP Term and Condition"* in Table G-1. Measures that have not been previously applied as COP terms and conditions do not have a checkmark in this column.

The Record of Decision (ROD) for the PEIS will state which of the AMMM measures identified in Table G-1 BOEM has committed to adopting at the COP NEPA stage and those which BOEM has not committed to adopting, and why. During NEPA review of individual COPs, BOEM may identify AMMM measures that do not apply to a specific COP if it can be demonstrated that implementation is not warranted or effective. Additionally, BOEM may identify additional mitigation or monitoring measures during COP-specific NEPA review to further protect and monitor resources. The environmental decision document for each COP-specific NEPA review will describe the specific terms and conditions of the AMMM measures for which compliance is required (40 Code of Federal Regulations [CFR] 1505.3). All NY Bight lessees will be required to certify compliance with these terms and conditions, under 30 CFR

285.633(a). Furthermore, pursuant to 30 CFR 585.634(b), BOEM will periodically review the activities conducted under the approved COPs for the six NY Bight lease areas with the frequency and extent of the review based on the significance of any changes in available information and on onshore or offshore conditions affecting, or affected by, the activities conducted under the COPs.

Monitoring may be required to evaluate the effectiveness of AMMM measures or to identify if resources are responding as predicted to impacts from each NY Bight project. This monitoring would typically be developed in coordination among BOEM and agencies with jurisdiction over the resource to be monitored. The information generated by monitoring may be used to (1) alter how an AMMM measure identified in the ROD is being implemented, (2) revise or develop new mitigation or monitoring measures for which compliance would be required under the COPs for the six NY Bight lease areas in accordance with 30 CFR 285.633(b)(2), (3) develop measures for future projects, or (4) contribute to regional efforts for better understanding of the impacts and benefits resulting from offshore wind energy projects in the Atlantic (e.g., potential cumulative impact assessment tool).

Table G-1. Proposed Action AMMM Measures

Measure ID[1]	Measure Name	Description	Resource Area Mitigated	Anticipated Enforcing Agency	Previously Applied as a COP Term and Condition
AQ-1	Using a substitute insulator gas in the switch gears and transmission systems to the maximum extent possible	Lessees must evaluate the feasibility of using non-SF_6 switchgear and shall provide the evaluation to BOEM for review. To the maximum extent feasible, Lessees should use a substitute insulator gas rather than SF_6 in the switchgear and transmission systems. If the Lessee determines using non-SF_6 switchgear is infeasible then the Lessee will provide written justification of this determination to BOEM. Any instances where the Lessee believes there is technical (and/or economic) infeasibility must be supported by a technical feasibility analysis, as appropriate, for review and concurrence by BOEM and BSEE. If non-SF_6 switchgear is determined to be technically infeasible, BOEM may consider requirements for SF_6 monitoring and leak detection.	Air Quality and GHG Emissions	BOEM and BSEE	
AQ-2	Cleaner fuels for vessels, equipment, and vehicles engaged in activities on the OCS	Lessees are encouraged to replace diesel fuel and marine fuel oil with alternative fuels such as natural gas, propane, or hydrogen, to the extent that use of such alternative fuels is feasible and provides emissions reductions. The Lessee will evaluate the feasibility of this mitigation measure and will provide the evaluation to BOEM for review. Any instances where the Lessee believes there is technical (and/or economic) infeasibility must be supported by a technical feasibility analysis, as appropriate, for review and concurrence by BOEM and BSEE.	Air Quality and GHG Emissions	BOEM and BSEE	
AQ-3	Electrification of vessels, equipment, and vehicles engaged in activities on the OCS	Lessees are encouraged to replace combustion engines with zero-emissions technology (fuel cell-electric or battery-electric) if feasible. The Lessee will evaluate the feasibility of this mitigation measure and will provide the evaluation to BOEM for review. Any instances where the Lessee believes there is technical (and/or economic) infeasibility must be supported by a technical feasibility analysis, as appropriate, for review and concurrence by BOEM and BSEE.	Air Quality and GHG Emissions	BOEM and BSEE	
AQ-4	Exhaust aftertreatment for vessels engaged in activities on the OCS	Lessees should evaluate, on a vessel-specific basis, the use of exhaust aftertreatments such as emission control technologies, for example, scrubbers for SO_2 and selective catalytic reduction for NO_X. The Lessee will evaluate the feasibility of this mitigation measure and will provide the evaluation to BOEM for review. Any instances where the Lessee believes there is technical (and/or economic) infeasibility must be supported by a technical feasibility analysis, as appropriate, for review and concurrence by BOEM and BSEE.	Air Quality and GHG Emissions	BOEM and BSEE	
AQ-5	Exhaust aftertreatment for older engines in vehicles and equipment engaged in activities on the OCS	Lessees are encouraged to use diesel particulate filters and diesel oxidation catalysts to retrofit older (USEPA Tiers 1–3) diesel engines if feasible. The Lessee will evaluate the feasibility of this mitigation measure and will provide the evaluation to BOEM for review. Any instances where the Lessee believes there is technical (and/or economic) infeasibility must be supported by a technical feasibility analysis, as appropriate, for review and concurrence by BOEM and BSEE.	Air Quality and GHG Emissions	BOEM and BSEE	
AQ-6	Onshore measures: zero-emissions technologies	Lessees are encouraged to require their contractors to use ports equipped with shore power and zero-emissions material-handling equipment, and construction firms that offer alternative-fueled or zero-emissions equipment and vehicles. The Lessee may evaluate the feasibility of this mitigation measure and provide the evaluation to BOEM for review.	Air Quality and GHG Emissions	Voluntary/Outside of BOEM jurisdiction	
AQ-7	Onshore measures: diesel engine emissions standards	Lessees are encouraged to require their contractors to ensure that all diesel engines in vehicles and equipment meet USEPA Tier 4 emissions standards. The Lessee may evaluate the feasibility of this mitigation measure and provide the evaluation to BOEM for review.	Air Quality and GHG Emissions	Voluntary/Outside of BOEM jurisdiction	
BB-1	Immediate reporting of injured/dead ESA-listed bird and bats	Any occurrence of dead or injured ESA-listed birds or bats must be reported to BOEM, BSEE, and USFWS as soon as practicable (taking into account crew and vessel safety), ideally within 24 hours and no more than 72 hours after the sighting. If practicable, the Lessees must carefully collect the dead specimen and preserve the material in the best possible state, contingent on the acquisition of any necessary wildlife permits and compliance with the Lessees' health and safety standards.	Bats, Birds	BOEM, BSEE, and USFWS	✓
BB-2	Injured/dead bird and bat reporting	Lessees must submit an annual report covering each calendar year, due by January 31, documenting any dead or injured birds or bats found on vessels and structures during construction, operations, and decommissioning in the preceding year. The report must be submitted to BOEM, BSEE, and USFWS. The report must contain the following information: the name of 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 United States Geological Survey Bird Band Laboratory.	Bats, Birds	BOEM, BSEE, and USFWS	✓
BB-3	Bird and bat monitoring	**Bird and Bat Post-Construction Monitoring Plan.** The Lessees must develop and implement a Bird and Bat Post-Construction Monitoring Plan (BBPCMP) based on the Lessees' Bird and Bat Post-Construction Monitoring Framework (BB-4), in coordination with BSEE, USFWS, and appropriate state 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 Lessees must submit a BBPCMP for BOEM, BSEE and USFWS review. BOEM, BSEE, and USFWS will review the BBPCMP and provide any comments on the plan within 60 days of its submittal. The Lessees must resolve all comments on the BBPCMP to the satisfaction of BOEM and BSEE, before implementing the plan and prior to the commissioning of WTG operations. The goals of the BBPCMP will be: (1) to advance understanding of how the target species utilize the offshore airspace and	Bats, Birds	BOEM, BSEE, and USFWS	✓

Measure ID[1]	Measure Name	Description	Resource Area Mitigated	Anticipated Enforcing Agency	Previously Applied as a COP Term and Condition
		do (or do not) interact with the wind farm; (2) to improve the collision estimates from the Stochastic Collision Risk Assessment for Movement (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. **Monitoring.** The Lessees must conduct monitoring as outlined in the Bird 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 BBPCMP 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. **Annual Monitoring Reports.** The Lessees must submit to BOEM (at renewable_reporting@boem.gov), USFWS, and BSEE (via TIMSWeb and at protectedspecies@bsee.gov) a comprehensive report after each full year of monitoring (pre- and post-construction) within12 months. The report must include all data, analyses, and summaries regarding ESA-listed and non-ESA-listed birds and bats. 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 BBPCMP. BOEM and BSEE reserve the right to require reasonable revisions to the BBPCMP and may require the use of new technologies as they become available for use in offshore environments. **Post-Construction Quarterly Progress Reports**. The Lessees must submit quarterly progress reports during the implementation of the BBPCMP to BOEM (at renewable_reporting@boem.gov), BSEE, and USFWS by the 15th day of the month following the end of each quarter during the first full year 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. **Monitoring Plan Revisions.** Within 30 days of submitting the annual monitoring report, the Lessees must meet with BOEM, BSEE, USFWS, and appropriate state agencies to discuss the following: the monitoring results; the potential need for revisions to the BBPCMP, 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, in consultation with USFWS, determines that revisions to the BBPCMP are necessary, BOEM will require the Lessees to modify the BBPCMP. If the projected collision levels, as informed by monitoring results, deviate substantially from the effects analysis, the Lessees must transmit recommendations for new mitigation measures and/or monitoring methods to BOEM. The frequency, duration, and methods for various monitoring efforts in future revisions of the BBPCMP 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 BBPCMP 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 Lessees shall continue implementation of appropriate monitoring activities for listed birds (under the current and future versions of the BBPCMP) until one of the following occurs: (i) the WTGs cease operation; (ii) USFWS concurs that a robust weight of evidence has demonstrated that collision risks to all listed birds from WTG operations are negligible (i.e., the risk of take from WTG operation is discountable); or (iii) 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 BOEM and the Lessee to reduce or offset collision mortality. **Operational Reporting (Operations)**. The Lessees must submit to BOEM (at renewable_reporting@boem.gov) 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 at >x revolutions per minute [rpm]) 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 CFR 585.114. **Raw Data.** The Lessees must store the raw data from all avian and bat surveys and monitoring activities according to accepted archiving practices. Such data must remain accessible to BOEM, BSEE and USFWS upon request for the duration of the lease. The Lessees must			

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		work with 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 BOEM, BSEE, and USFWS following the protocols and procedures outlined in the agency document entitled *Guidance for Coordination of Data from Avian Tracking Studies*, or its successor applicable at the time the particular data is being stored. All bat data must be stored in NBat.			
BB-4	Bird and bat monitoring plan framework	Lessees must develop a framework for a Bird and Bat Post-Construction Monitoring Plan (BB-3) in coordination with BOEM and USFWS. Lessees are encouraged to include this framework with their initial COP submission or subsequent updated versions.	Bats, Birds	BOEM and USFWS	
BEN-1	Boulder avoidance, identification, and relocation	Lessees must avoid boulders within the lease area and along the export cable corridor; if avoidance is not possible, Lessees must minimize the boulder relocation distance. If the Lessee needs to relocate boulders, they must submit a Boulder Identification and Relocation Plan. The plan must detail, to the extent technically and/or economically practical or feasible for the project, how the Lessee will relocate boulders as close as practicable to areas immediately adjacent to existing similar habitat. The plan must be submitted to BOEM and BSEE to coordinate with NMFS for a 60-day review, 120 days prior to boulder relocation activities. The Lessee must resolve all comments on the Boulder Relocation Plan to BOEM and BSEE's satisfaction prior to implementation of the plan. If BOEM or BSEE do not provide comments on the plan within 60 days of its submittal, then the Lessee may presume concurrence with the plan. The plan must include sufficient scope to mitigate boulders for facility installation and operation risks.	Benthic; Finfish, Invertebrates, and EFH	BOEM, BSEE, and NMFS	✓
BEN-2	Foundation scour protection monitoring	The Lessee 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 BSEE's concurrence prior to initiating the inspection program. If BSEE does not send comments within 60 days, the Lessee may presume concurrence. • The Lessee must carry out an initial foundation scour inspection of each foundation within 6 months of completing installation of that foundation, thereafter at intervals not greater than 5 years, and within 180 days after a storm event (as defined by the post-storm event monitoring plan, described in MUL-16). • 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 to be provided within 90 days of completing the last foundation scour inspection within this single survey effort. The schedule of reporting must be included in the Inspection Plan and concurred in by BSEE. • If scour protection losses develop within 10% of the maximum loss allowance, edge scour develops within 10% of the maximum allowance, or if spud depressions from installation affect scour protection stability, the Lessee must submit a plan for additional monitoring and/or mitigation to BSEE for review and concurrence.	Benthic; Finfish, Invertebrates, and EFH	BOEM, BSEE, and NMFS	✓
BIR-1	Bird-Deterrent Devices and Plan	To minimize attracting birds to operating WTGs, the Lessees must install bird perching-deterrent device(s) on each WTG and OSS. The Lessees must submit a plan to deter perching on offshore infrastructure by roseate terns and other marine birds for BOEM and BSEE to review in coordination with USFWS and with the FIR ("Bird Perching Deterrent Plan"). BOEM and BSEE will review the Bird Perching Deterrent Plan and provide any comments on the plan within 60 days of its submittal. The Lessees must resolve all comments on the Bird Perching Deterrent Plan to the satisfaction of BOEM and BSEE before implementing the plan The Bird Perching Deterrent Plan must include the type(s) and locations of bird perching-deterrent devices and a monitoring plan for the life of the project, must allow for modifications and updates as new information and technology becomes available, and must track the efficacy of the deterrents. The plan must be based on best available science regarding the effectiveness of perching-deterrent devices on minimizing collision risk. The location of bird perching-deterrent devices must be proposed by the Lessees based on best management practices applicable to the appropriate operation and safe installation of the devices. The Lessees must also provide the location and type of bird-deterrent devices as part of the as-built submittals to BSEE.	Birds	BOEM, BSEE, and USFWS	✓
BIR-2	Light impact reduction for birds	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).	Birds	FAA, USCG, BOEM, and BSEE	
BIR-3	Compensatory Mitigation Plan for	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 USFWS for review and comment. BOEM, BSEE, and USFWS will review the Compensatory Mitigation Plan and provide	Birds	BOEM, BSEE, and USFWS	✓

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	Piping Plover and Red Knot	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 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 including mitigation mechanisms (e.g., mitigation agreement, applicant-proposed mitigation), (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, and (e) monitoring to ensure the effectiveness of the mitigation actions in offsetting take.			
COMFIS-1	Compensation for gear loss and damage	The Lessee should implement a gear loss and damage compensation program. The Lessee should consult BOEM's draft guidance for Mitigating Impacts to Commercial and Recreational Fisheries on the Outer Continental Shelf Pursuant to 30 CFR 585 or as modified in response to public comment in the development of the program. For example, the Lessee should consider compensation for damaged gear resulting from interactions between the fishing industry and non-marked/non-charted or marked/charted property (e.g., concrete mattresses) of the Lessee.	Commercial and For-Hire Fishing	BOEM and BSEE	
COMFIS-2	Scour and cable protection	In areas where scour and/or cable protection measures are required, the Lessee must ensure that all materials used for these measures reflect the pre-existing conditions at the site, as technically or economically feasible. To avoid new hangs for mobile fishing gear in areas that are regularly trawled, cable protection measures must have tapered or sloped edges. In areas that are not regularly trawled, natural or engineered stone or concrete may be employed. These materials should provide three-dimensional complexity in height and in interstitial spaces, as technically or economically feasible. All materials should not inhibit epibenthic growth. The Lessee must prepare a Scour and Cable Protection Plan (SCPP) that includes descriptions and specifications for all cable protection materials. The Lessee must submit the SCPP to BOEM, BSEE, and NOAA. The Lessee must resolve all comments on the SCPP to BOEM and BSEE's satisfaction before placement of cable protection measures.	Commercial and For-Hire Fishing	BOEM and BSEE	✓
COMFIS-3	Scallop Monitoring Plan	The Lessee should coordinate with NMFS and potentially impacted scallop fishermen to develop a Scallop Monitoring Plan. The plan should discuss potential impacts from construction, including turbidity, problems due to scour protection, cooling of waters, changed currents, etc., and methods to avoid or reduce those impacts. Lessees should monitor potential impacts on scallop populations and use consistent methodologies for standard and robust data collection. Data should be compatible with other collected information for regional data integration and analyses. If the monitoring results deviate substantially from the anticipated impacts, the Lessees are encouraged to propose new mitigation measures and/or monitoring methods to BOEM and BSEE for review and concurrence.	Commercial and For-Hire Fishing	BOEM, BSEE, and NMFS	
COMFIS-4	Fisheries mitigation	**Static cable design elements** are recommended: 1. All static cables should be buried to a minimum depth of 3 feet below stable seabed where technically feasible. Technical feasibility constraints include seabed conditions that preclude burial, such as telecommunication cable crossings. Deeper cable burial depths may be required dependent on risks identified in cable route design (see the Carbon Trust's Cable Burial Risk Assessment Methodology at: https://ctprodstorageaccountp.blob.core.windows.net/prod-drupal-files/documents/resource/public/cable-burial-risk-assessment-guidance.pdf). 2. Lessees should avoid installation techniques that raise the profile of the seabed, such as the ejection of large, previously buried rocks or boulders onto the surface. The ejection of this material may damage fishing gear. If raising the profile of the seabed is unavoidable, the Lessees should propose measures in the COP to minimize the total area of impact through measures such as removing potential obstructions from areas where bottom-tending fishing gear is actively used or consolidating such obstructions in areas where bottom-tending fishing gear is not actively used. 3. If needed, cable protection measures should reflect the pre-existing conditions at the site. This mitigation measure ensures that seafloor cable protection does not introduce new obstructions for mobile fishing gear. Thus, the cable protection measures should be trawl-friendly with tapered or sloped edges. If cable protection is necessary in "non-trawlable" habitat, such as rocky habitat, then the Lessees should use materials that mirror the benthic environment. 4. Where technically and economically feasible, cables should share corridors and minimize the total area disturbed. **Project design** should be planned in coordination with fisheries: 1. The facility design should seek to maximize existing access to fisheries in balance with other siting constraints by considering: a. Transit within the project area and traditional fishing activities within the project area. b. Consolidation of infrastructure, where practicable, to reduce space-use conflicts. c. Technologies to reduce total project area and meet energy production commitments.	Commercial and For-Hire Fishing	Voluntary	

Measure ID[1]	Measure Name	Description	Resource Area Mitigated	Anticipated Enforcing Agency	Previously Applied as a COP Term and Condition
		2. Turbine locations should be sited to avoid areas of commercial fishery production such as known sensitive benthic features and natural and artificial reefs. 3. Facility planning should use nature-inclusive designs (see Evaluating the Effectiveness of Nature Inclusive Design Materials at: https://www.boem.gov/sites/default/files/documents/environment/environmental-studies/SDP_2022-2023.pdf), where applicable, to maximize available habitat for fish. 4. Installation techniques and time windows should minimize disruption to fishing activities (e.g., simultaneous lay and burial, or conducting activity during the appropriate time of year). To improve **safety** at sea in and around offshore wind facilities, BOEM recommends that Lessees consider the following measures in their plan submittals: 1. Charting all facilities and obstructions resulting from construction and operations of an offshore wind energy facility and providing that information to NOAA, USCG, and navigational software companies. 2. Employing liaisons with experience in the commercial fishing industry to provide safety and communication services during construction. 3. Monitoring cable burial in real-time and reporting all potential hazard events to USCG as soon as possible throughout the life of the project. 4. Using digital information technology platforms (e.g., smartphone applications) to bring together survey and construction schedules and locations in addition to standard local notices to mariners via the USCG. 5. Marking facilities and appurtenances with permanent identification of the project and company. 6. Providing training opportunities for the commercial fishing industry to simulate safe navigation through a wind facility in various weather conditions and at various speeds. 7. Monitoring safety threats (e.g., radar disruption, ice shedding, vessel allisions and collisions, security threats, unexploded ordnance/munitions of explosive concern, and impacts on search and rescue efforts) throughout the life of a project. 8. Consulting with the fishing industry and USCG to identify which structures would be most appropriate for Automatic Identification System (AIS) transponders consistent with BOEM's Lighting and Marking Guidelines (https://www.boem.gov/2021-lighting-and-marking-guidelines). 9. Considering Lessee-funded radar system upgrades for commercial and for-hire recreational fishing vessels (e.g., solid state Doppler-based marine vessel radar systems; see National Academies of Science Engineering and Medicine 2022).[1]			
COMFIS-5	Fisheries Survey Guidelines	Lessees should follow the BOEM Fisheries Survey Guidelines (Fisheries Guidelines, updated March 27, 2023, at: https://www.boem.gov/sites/default/files/documents/about-boem/Fishery-Survey-Guidelines.pdf) with regards to pre-, during- and post-construction fisheries monitoring survey plan design.	Commercial and For-Hire Fishing, Marine Mammals	Voluntary	
COMFIS-6	Fisheries compensatory mitigation	The Lessees must establish a compensation/mitigation fund (Fund) 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. The Fund should also allow for compensation to shoreside businesses for losses indirectly related to project development. The Lessee may use BOEM's draft Guidance for Mitigating Impacts to Commercial and Recreational Fisheries on the Outer Continental Shelf Pursuant to 30 CFR 585 (Guidance) to aid it in establishing such a Fund. For losses to commercial and for-hire recreational fishermen, the Fund must be based on the revenue exposure for fisheries. For losses to shoreside businesses, the Lessee will analyze the impacts on shoreside seafood businesses. Shoreside businesses that may be impacted may include (but are not limited to): fishing gear suppliers and repair services, vessel fuel and maintenance services, ice and bait suppliers, seafood processors and dealers, and wholesale seafood distributors. The Lessee will be required to provide BOEM with its analysis (including any model outputs, such as an IMPLAN model or other economic report) verifying the impacts on shoreside businesses and services. The Lessee must submit to BOEM a report that includes (1) a description of the structure of the Fund and (2) an analysis of the impacts of the expected development 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:	Commercial and For-Hire Fishing	BOEM, BSEE, NJDEP, and NYDEP	

[1] National Academies of Science Engineering and Medicine. 2022. Wind Turbine Generator Impacts to Marine Vessel Radar. Washington, D.C.: The National Academies Press. https://doi.org/10.17226/26430.

Measure ID[1]	Measure Name	Description	Resource Area Mitigated	Anticipated Enforcing Agency	Previously Applied as a COP Term and Condition
		• 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 shoreside businesses resulting from all phases of the project development on the lease area (pre-construction, construction, operation, and decommissioning); • The Fund charter, including the governance structure, audit and public reporting procedures, and standards for paying compensatory mitigation for impacts on fishers and related shoreside businesses from lease area development; and • Documentation regarding the funding account, including the dollar amount, establishment date, financial institution, and owner of the account.			
CUL-2	Marine cultural resources avoidance or additional investigation	BOEM will establish and Lessees must comply with requirements for all protective buffers recommended by BOEM for each marine cultural resource (i.e., archaeological resource and ASLFs) based on the size and dimension of the resource. Protective buffers must extend outward from the maximum discernable limit of each resource and are intended to minimize the risk of disturbance during construction. If an adverse effect cannot be avoided, the Lessee will be required to conduct further investigations to minimize or resolve effects on these historic properties.	Cultural Resources	BOEM or BSEE	✓
CUL-3	Ancient submerged landform feature (ASLF) monitoring program and marine archaeological post-review discovery plan	BOEM will establish and the Lessees must comply with monitoring and post-review discovery plans outlining processes to document and review impacts of construction or any seabed-disturbing activities on marine cultural resources. Such plans may be submitted to BOEM with the Marine Archaeological Resources Assessment appendix to the COP, or may be developed in the course of BOEM's project-level NEPA review and Section 106 consultation on marine archaeological resources. A post-review discovery plan approved by BOEM is also required in the event that an unanticipated discovery and/or inadvertent impact of a marine archaeological resource occurs.	Cultural Resources	BOEM or BSEE	✓
CUL-4	Terrestrial archaeological resource avoidance or additional investigation	BOEM will establish avoidance criteria for any identified terrestrial archaeological historic property or any unevaluated terrestrial archaeological resource. Lessees must avoid impacts on identified terrestrial archaeological historic properties or unevaluated resources. If avoidance is not feasible, the Lessee must develop a plan to be submitted to BOEM that addresses the adverse effect on the terrestrial archaeological resource. The Lessee may submit this plan with the Terrestrial Archaeological Resources Assessment appendix to the COP, or may develop this plan in the course of BOEM's project-level NEPA review and Section 106 consultation on terrestrial archaeological resources. Avoidance would entail the development and implementation of avoidance buffers around each historic property and unevaluated resource. If avoidance of an unevaluated resource is not feasible, additional investigations must be conducted for the purpose of determining eligibility for listing in the NRHP.	Cultural Resources	BOEM, BSEE, or other agencies that have statutory enforcement authority over cultural resources	✓
CUL-5	Terrestrial archaeological resource monitoring program and terrestrial archaeological post-review discovery plan	BOEM will establish and the Lessees must comply with monitoring and post-review discovery plans outlining processes to document and review impacts of construction or any ground-disturbing activities on terrestrial archaeological resources. A monitoring plan may be submitted to BOEM with the Terrestrial Archaeological Resources Assessment appendix to the COP, or may be developed in the course of BOEM's project-level NEPA review and Section 106 consultation on terrestrial archaeological resources. A monitoring plan may be required for certain areas, identified through consultation, to ensure impacts on resources are avoided or minimized. A post-review discovery plan would be required regardless of impacts for the purposes of establishing a protocol in the event of an unanticipated discovery and/or inadvertent impact on a terrestrial archaeological resource.	Cultural Resources	BOEM, BSEE, or other agencies that have statutory enforcement authority over cultural resources	✓
CUL-6	Historic Properties Treatment Plans (HPTPs)	BOEM, with the assistance of the Lessees, must develop and implement one or more Historic Property Treatment Plans (HPTPs) to address adverse effects on historic properties that cannot be avoided. Draft HPTPs may be submitted to BOEM with the Historic Resources Visual Effects Analysis, Terrestrial Archaeological Resources Assessment, or Marine Archaeological Resources Assessment appendices to the COP, or may be developed in the course of BOEM's project-level NEPA review and Section 106 consultation. The HPTP(s) will be developed in consultation with property owners and consulting parties who have demonstrated interest in specific historic properties. The HPTP(s) will provide details and specifications for mitigation measures to resolve adverse effects, including cumulative visual effects on aboveground historic properties.	Cultural Resources	Mitigation may be required by Section 106 of the NHPA consultation	✓
CUL-7	Section 106 mitigation fund	Through consultation, BOEM may request that the Lessees financially contribute to a third-party managed compensatory mitigation fund to address impacts on historic properties related to OCS offshore wind activities.	Cultural Resources	Mitigation may be required by Section 106 of the NHPA consultation	✓
EJ-1	Environmental Justice Communications Plan	The Lessee must submit a draft Environmental Justice Communications Plan (EJ Communications Plan) for communicating with Environmental Justice (EJ) communities or populations (defined for all mitigations as "communities with environmental justice concerns" or underserved communities as related to the intent of Executive Orders 12898 and 14096, referred to herein as "EJ populations") as a part of its initial COP submission or in subsequent updated versions. The EJ Communications Plan must document	Environmental Justice, Land Use and Coastal Infrastructure	BOEM, BSEE, and USACE	

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		the process of how the Lessee plans to communicate during activities described in the COP, including construction, operations, and decommissioning. Because potential impacts on EJ populations are expected to be much lower during operations than during construction or decommissioning, the EJ Communications Plan should reflect different levels of communications needed, as appropriate, during these different stages. The Lessee may utilize efforts or language developed for any state requirements to satisfy this EJ Communication Plan partially or wholly. The EJ Communications Plan must specifically target low-income and minority populations, and communities identified by applicable state-level EJ and related screening tools, and advance meaningful engagement based on each affected community's unique communication and information needs. The plan must be finalized prior to COP decision. In the EJ Communications Plan, the Lessee must: • Describe which EJ populations may be potentially affected by COP activities, with sufficient detail about which activities could impact which areas or populations and at what times. In identifying EJ populations, Lessees should use both federal and state-level screening tools with an intent to be as inclusive as possible and meet the most recent guidance and best practices. At minimum, the following screening tools should be used, as applicable to the project location: Environmental Protection Agency's EJScreen, New York Department of Environmental Conservation Potential Environmental Justice Areas, New York State Disadvantaged Communities Mapping Tool, and New Jersey Department of Environmental Protection EJMAP tool. Lessees should review additional data sources and tools for potential incorporation and must document the sources and methods for identifying EJ populations included in the EJ Communications Plan. • Describe how each potentially affected EJ population desires to be communicated with during activities described in the COP (e.g., communication methods, language needs). • Describe how coordination with other Lessees in the region will occur in advance of communication with EJ populations, especially in cases where onshore activities described in the COP may be in proximity to other projects. The intent of coordination is to reduce engagement redundancy and burden on EJ populations. • Describe how Lessees will communicate when and where activities described in the COP will take place, who they may affect, and how they may affect EJ populations. • Describe how Lessees will respond to any concerns or questions from EJ populations during activities described in the COP, and the process Lessees will undertake to communicate with EJ populations to ensure these concerns or questions are addressed. Include how the Lessee will handle any questions or concerns that are not related to that Lessee's activities or applicable to regional offshore wind activities. • Describe when, how, and to whom employment opportunities are advertised and how the Lessee plans to maximize access to those opportunities for low-income and minority populations, including but not limited to the communication and advertising for training programs and hiring processes. • Describe how the Lessee will communicate investment or supply chain opportunities to meet any Lessee commitments to diversity or equal access, including but not limited to those included in NY Bight lease stipulation 7.1. • Describe any related requirements or ongoing efforts in coordination with the states of New York and New Jersey. Include a summary of feedback received from EJ populations on the above bullets (see EJ-3).			
EJ-2	Environmental Justice Mitigation Resources Plan	Lessees must submit, along with the draft EJ Communications Plan (EJ-1) as part of their initial COP submission or in subsequent updated versions, a draft Environmental Justice Community Mitigation Resources Plan (EJ Mitigation Resources Plan) for providing households in EJ populations that are impacted by activities described in the COP (affected households) with any supplies or mitigation resources needed (e.g., air filters, noise canceling headphones, blackout curtains) to reduce adverse impacts. The EJ Mitigation Resources Plan must provide sufficient detail on how eligibility for mitigation resources will be determined, including duration for which resources will be provided, based on anticipated activities and localized impacts, including examples. The plan must also outline roles and responsibilities of households and Lessees, and there should be clear guidelines around principles of equity, transparency, and fairness. The plan must be finalized prior to COP decision.	Environmental Justice	BOEM, BSEE, and USACE	
EJ-3	Reporting and feedback requirements for (1) EJ Communications Plan and (2) EJ Mitigation Resources Plan	Lessees must submit updates on progress toward developing an EJ Communications Plan and an EJ Mitigation Resources Plan every 6 months through the Progress Report as required in NY Bight lease stipulation 3.1 of Addendum C. Lessees must incorporate EJ community feedback into their EJ Communications Plan and EJ Mitigation Resources Plan. BOEM's Environmental Justice Forum associated with the NY Bight PEIS may be one opportunity to coordinate with EJ populations and organizations that serve them, but BOEM expects additional coordination would be needed specifically targeting f potentially affected EJ populations. Lessees should look to state requirements and best practices on locally appropriate engagement. BOEM may provide	Environmental Justice	BOEM, BSEE, and USACE	

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		feedback on the two plans for Lessee consideration but will consider these plans compliant upon receipt if they have provided all applicable descriptions and demonstrate that meaningful engagement occurred, including sharing the plans with EJ populations for feedback. Under the annual certification of compliance per 30 CFR 285.633, "How do I comply with my COP?" Lessees shall provide a summary of any EJ Communications Plan or EJ Mitigation Resource Plan activities that occurred. This should describe all actions taken that year under the EJ Communications Plan and summarize the number and type of mitigation resources distributed, and to which EJ populations they were distributed. Implementation of the EJ Communications Plan and EJ Mitigation Resources Plan in potentially affected EJ populations during construction and operations shall be audited through BSEE's Safety Management System (SMS). Through the SMS, Lessees are expected to adaptively address communications and mitigation resource needs over the life of the project. Lessees are expected to respond to any recommendations made by EJ populations or BSEE during the audit process in order to improve the plans over time. All changes must be initially discussed with BSEE through the SMS process. Any changes to the EJ Communications Plan or EJ Mitigation Resources Plan, jointly agreed upon by Lessees and BSEE during the SMS process, must be documented in the summary in the annual certification of compliance with an explanation for why the change was needed, a description of expected outcomes, and documentation of meaningful engagement with potentially affected EJ populations related to the change. All written deliverables may be made publicly accessible on BOEM or BSEE's website; they must be submitted in a ready to publish format that also meets requirements of Section 508 of the Rehabilitation Act (29 U.S.C. 794d), as amended.			
EJ-4	EJ compensatory mitigation	Lessees will financially contribute annually an amount (not to exceed 1% of revenue calculated per MWh) for the duration of electricity production to a third-party managed compensatory mitigation fund to address disproportionate and adverse impacts on EJ populations directly tied to OCS offshore wind activities, as related to the impact analysis discussed in the COP-specific NEPA review, that has not been addressed through another mitigation measure. Fund contributions will be based on analysis of residual disproportionate and adverse impacts in the COP-specific NEPA review. Lessees will contribute to the fund upon selection of this measure as a condition of approval of the COP. A Board of Trustees with representatives from impacted communities, community-based organizations, state representatives, Tribal Nations, and offshore wind Lessees will be set up to make decisions and liaise with the third-party fund managers. A multi-party group with representatives from each aforementioned category will be convened in coordination with third-party fund managers to develop a Charter that specifies roles, responsibilities, and the selection process for the Board of Trustees. The amount of the contribution(s) will be calculated based on residual impacts, and flexible under the 1% threshold, and may be adjusted as needed based on the level of impacts occurring, which will vary over the life of the project. Specific criteria of fund management and fairness (e.g., fiduciary controls, minimization of administrative expenses, representation of underserved communities on the board of trustees) will be set to ensure proper management of the fund and selection criteria for recipients of funds. Managed funds would be distributed by the third-party manager as grant(s) to households, businesses, community-based organizations, or other appropriate recipient that demonstrate they (1) meet the definition of being part of an EJ population or community with environmental justice concerns (as defined under Executive Orders 12898 or 14096) or potential EJ areas identified by New York Department of Environmental Conservation or New Jersey's Environmental Justice Law (New Jersey Statutes Annotated 13:1D-157) definition of overburdened communities and (2) have been disproportionately and adversely impacted by OCS offshore wind activities. Any monetary distributions from the fund shall accomplish at least one of the following objectives: (1) improve household or community-level responses or ability to adjust to disproportionate and adverse impacts, including lost wages or job loss; (2) protect or improve community-wide access to coastal recreation and greenspace areas or enjoyment of coastal viewsheds to offset any changes directly caused by OCS offshore wind activities; or (3) enhance community welfare to offset disproportionate and adverse impacts of OCS activities on community welfare. Eligible impacts must be a direct result of OCS offshore wind activities and not otherwise mitigated. The mitigation measure applies to BOEM-authorized and -permitted activities and associated support activities, which could occur on the OCS or onshore.	Environmental Justice	BOEM and BSEE	
MM-1	Reporting of all NARW sightings	If a NARW is observed at any time by PSOs or personnel on any project vessels, during any project-related activity, or during vessel transit, the Lessee must report the sighting information immediately after conclusion of the detection event (the time, location, and number of animals, closest point of approach, activities at time of detection, vessel speed, animal behavior, who made initial detection, was the required notification issued, mitigation measures implemented) to BOEM (renewable_reporting@boem.gov), NOAA Fisheries 24-hour Stranding Hotline number (866-755-6622), USCG via channel 16, BSEE (TIMSWeb and notification email to protectedspecies@bsee.gov), and through the WhaleAlert app (http://www.whalealert.org/).	Marine Mammals	BOEM, BSEE, and NMFS	✓

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MM-2	Real-time PAM monitoring and alert system for baleen whales	Implementation of a near real-time passive acoustic monitoring (PAM) system for the detection of baleen whales in the NY Bight during offshore wind development activities will be required, with an alert system/notice to mariners/construction operators. This could be achieved through the deployment of several ocean gliders or fixed PAM systems in the broader NY Bight area. The equipment could be deployed anywhere there is offshore wind development activities, including on the leases, but may be particularly useful between leases where the placement of other real-time PAM systems is not already directed, or near transit or cable-laying corridors, or other locations where real-time alerting of marine mammal presence would be beneficial to the offshore wind-related activities occurring in one or more lease areas. Every effort should be made to deploy equipment in advance of any on-water activity, including site characterization work, construction work, etc., for use in mitigating against potential vessel strike risk. Each system will be equipped with reliable PAM technology and marine mammal detection and classification software. Detections will be transmittable to a PAM analyst for verification. The systems will be capable of alerting offshore wind developers that a baleen whale has been detected in the general area of offshore wind development-related activity, through methods such as Whale Alert or an offshore wind-specific notification system. This could also be achieved through partnership with other industries, academia, NGOs, and federal agencies in a regional effort. This real-time PAM alert system will increase the opportunity to detect marine mammals in the greater NY Bight area, providing the opportunity for increased situational awareness (for vessel strike avoidance) to PSOs and others of marine mammal presence in the area. The submission of raw data or data products associated with real-time PAM will be required. The real-time PAM data will be saved and stored for archiving as soon as practicable after instrument recovery through the National Centers for Environmental Information or a similar entity determined by BOEM. The archived data will be integrated into community PAM efforts in the broader region, such as through the Regional Wildlife Science Collaborative, to understand marine mammal distribution/occurrence in the area, which can then be used to inform future predictions of potential impacts to marine mammals.	Marine Mammals	BOEM, BSEE, and NMFS	
MM-3	Long-term PAM monitoring	The Lessee must conduct archival, continuous, and long-term PAM to develop baselines and monitor changes in the presence of marine species as well as changes in ambient noise for 1 year before construction through at least 10 years of operations. The exact number of instruments per lease area will vary but will be configured to identify and localize the calls of vocalizing NARWs within the lease area. Throughout deployments and data analysis, the Lessee will be expected to follow the best practices outlined in the Regional Wildlife Science Collaborative (RWSC) Best Practices. The Lessee must also process the data to document, at the very least, the locations of baleen whale vocalizations (with confidence intervals) and metrics of ambient noise. The Lessee will be expected to archive the full acoustic record at National Centers for Ecological Information and to submit baleen whale detections to BOEM, BSEE, and NMFS at least twice a year. As an alternative to conducting PAM in its project area, the Lessee may opt to pay into BOEM's Environmental Studies Fund on an annual basis to support long-term monitoring (equipment, deployment, data processing and archiving)—all done in a pooled approach with the RWSC—in lieu of doing it themselves. If the Lessee chooses this option, they may consult with BOEM to learn the price for their given lease area. The price and efficacy of the monitoring will be evaluated after the third year of operations is complete and is therefore subject to change. Developers would not be required to submit a Long-Term PAM Plan if they chose this option.	Marine Mammals	BOEM, BSEE, and NMFS	
MM-5	NARW Strike Management Plan	All offshore wind-related vessels will travel at 10 knots (18.5 kilometers per hour) or less while transiting to and from U.S. ports to lease areas, and while operating within lease areas, unless a NARW Strike Management Plan is submitted to BOEM, BSEE and NMFS prior to the Plan's implementation. The plan must provide details on how the required vessel and/or aerial-based surveys, and PAM, and/or other detection methodologies will be conducted to clear the vessel routes of NARW presence. The plan must also provide details on the vessel-based observer protocol on transiting vessels as well as any further efforts to minimize potential impacts. BOEM and BSEE will review the NARW Strike Management Plan and provide comments, if any, on the plan. The Lessee must resolve all comments on the NARW Strike Management Plan to BOEM and BSEE's satisfaction prior to implementing the plan.	Marine Mammals	BOEM, BSEE, and NMFS	
MMST-1	Alternative Monitoring Plan	The Lessees must submit a single Alternative Monitoring Plan containing two parts: (1) Low-Visibility Pile-Driving Monitoring and (2) Nighttime Pile-Driving Monitoring for review by NMFS, BSEE and BOEM prior to initiating foundation pile-driving activities. The purpose of this plan is to demonstrate that the Lessees can meet the visual monitoring criteria for the Level A harassment zone(s)/mitigation and monitoring zones plus an agreed-upon buffer zone (these combined zones are referred to henceforth as the nighttime and low-visibility clearance and shutdown zones). Both parts will demonstrate effective use of technologies that the Lessee is proposing to use for monitoring during nighttime and low-visibility conditions for instances during daylight hours when lighting or weather (e.g., fog, rain, sea state) prevent visual monitoring of the full extent of the clearance and shutdown zones. "Daytime" is defined as 1 hour after civil sunrise to 1.5 hours before civil sunset.	Marine Mammals, Sea Turtles	BOEM, BSEE, and NMFS	

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		The Alternative Monitoring Plan must also include measures for deploying additional observers, or using PAM with the goal of ensuring the ability to maintain all clearance and shutdown zones in the event of unexpected poor visibility conditions. BOEM and BSEE will review the Alternative Monitoring Plan and provide comments, if any, on the plan. The Lessee must resolve all comments on the Alternative Monitoring Plan to BOEM and BSEE's satisfaction prior to implementing the plan. 1. **Low-Visibility Pile-Driving Monitoring**: This part of the plan will need to identify the following components: identification of low-visibility monitoring devices (e.g., vessel-mounted thermal infrared [IR] camera systems, handheld or wearable night vision devices [NVDs], handheld IR imagers) that would be used to detect marine mammal and sea turtle species relative to the established clearance and shutdown zones. The buffer zone distance and visual monitoring criteria will be developed by NMFS and BOEM at the project stage. The Low-Visibility Pile-Driving Monitoring part will be applicable during pile-driving activities conducted in poor or low-visibility conditions (i.e., instances where clearance and shutdown zones cannot be effectively monitored), hereafter termed low-visibility pile-driving. If during low-visibility pile-driving, undetected animals are found in the clearance and/or shutdown zones, low-visibility pile-driving activities must cease as soon as possible in consideration of human safety, and applicable federal permitting agencies must be notified immediately. Low-visibility pile-driving must not restart until approval is provided by applicable federal permitting agencies unless visibility improves to normal conditions. 2. **Nighttime Pile-Driving Monitoring**: This part of the plan must demonstrate the capability of the proposed monitoring methodology to detect marine mammals and sea turtles within the full extent of the established clearance and shutdown zones (i.e., species can be detected at the same distances and with similar confidence) with the same effectiveness as daytime visual monitoring (i.e., same detection probability). Only devices and methods demonstrated as being capable of detecting marine mammals and sea turtles to the maximum extent of the clearance and shutdown zones will be acceptable. This part of the plan will include the following components: identification of nighttime monitoring devices (e.g., vessel-mounted thermal IR camera systems, handheld or wearable NVDs, handheld IR imagers); the Lessee must discuss the efficacy (range and accuracy) of each device proposed for nighttime monitoring as demonstrated in field trials. The plan must include procedures and timeframes for notifying the applicable federal permitting agencies of the Lessee's intent to pursue nighttime foundation pile-driving, and reporting procedures, contacts, and timeframes. The Nighttime Pile-Driving Monitoring part would be reviewed by both NMFS and BOEM. Factors for review will be developed by NMFS and BOEM at the project stage. If the Nighttime Pile-Driving Monitoring part of the plan is not accepted, foundation pile-driving may commence only during daylight hours and no earlier than 1 hour after civil sunrise. Foundation pile-driving may not be initiated any later than 1.5 hours before civil sunset and may continue after dark only when the installation of that pile began during daylight hours and must proceed for human safety or installation feasibility reasons. If the Nighttime Pile-Driving Monitoring part of the plan is accepted, in addition to foundation pile-driving commencing during daylight hours, new piles may be initiated outside of the previously defined daylight hours (1 hour after civil sunrise to 1.5 hours before civil sunset) to meet schedule requirements.			
MMST-2	Impact Pile-Driving Monitoring Plan	In the case where low noise foundation types are not practicable and impact pile-driving is required, Lessees must submit a final Pile-Driving Monitoring Plan (PDM Plan) to BOEM (renewable_reporting@boem.gov), BSEE (via TIMSWeb and protectedspecies@bsee.gov), and NMFS for review 120 days prior to the commencement of pile-driving activities. The Lessee must resolve all comments to BOEM and BSEE's satisfaction on the plan before operations can begin, and operations must be conducted according to the plan. The plan will detail all plans and procedures for any noise mitigation used, as well as for monitoring ESA-listed whales and sea turtles during all impact and vibratory pile-driving. The PDM Plan must: 1. Contain information on the visual and PAM components of the monitoring describing all equipment, procedures, and protocols. 2. Demonstrate that the PAM system has a near-real-time capability of detection to the full extent of the 160 dB distance from the pile-driving location. 3. Include a detection confidence that a vocalization originated from within the clearance and shutdown zones to determine that a possible NARW has been detected. Any PAM detection of a NARW within the clearance/shutdown zone surrounding a pile must be treated the same as a visual observation and trigger any required delays in pile installation. 4. Ensure that the full extent of the harassment distances from piles are monitored for marine mammals and sea turtles to document all potential take. 5. Include number of PSOs that will be used, the platforms or vessels upon which they will be deployed, and contact information for the PSO providers. 6. Include an Alternative Monitoring Plan (see MMST-1) that provides for enhanced monitoring capabilities in the event that poor visibility conditions unexpectedly arise, and pile-driving cannot be stopped.	Marine Mammals, Sea Turtles	BOEM, BSEE, and NMFS	

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		7. Describe a communication plan detailing the chain of command, mode of communication, and decision authority. 8. Include reporting PSO and crew member/equipment operator titles and responsibilities, including who makes determinations of equipment shutdown feasibility. PSOs as determined by NMFS and BOEM must be used to monitor the area of the clearance and shutdown zones. Seasonal and species-specific clearance and shutdown zones must also be described in the PDM Plan including time-of-year requirements for NARWs. A copy of the approved PDM Plan must be in the possession of and followed by the Lessee Representative, the PSOs, impact-hammer operators, and any other relevant designees operating under the authority of the approved COP and carrying out the requirements on site.			
MMST-3	Pile-driving clearance and shutdown zone adjustments	In order for pile-driving clearance and/or shutdown zones to be decreased, the Lessee must request modification of the clearance and shutdown zones based on Thorough Sound Field Verification (MUL-29) measurements at a minimum of three foundations, which must meet the Received Sound Level Limit (MUL-22), when effective, as well as minimum seasonal distances for threatened and endangered species that may be specified in the Biological Opinion. If Sound Field Verification (SFV) measurements indicate that the isopleths of concern are larger than those considered in the Proposed Action for the COP NEPA analysis, the Lessee must, in coordination with applicable federal permitting agencies, implement additional sound attenuation measures before driving any additional piles and conduct Thorough Sound Field Verification (MUL-29) for the subsequent three foundation installations. The Lessee must submit the results of the field measurements to BOEM, BSEE, NMFS, and USACE (when applicable) within 48 hours. The agencies will provide direction to the Lessee on whether any additional modifications are required.	Marine Mammals, Sea Turtles	BOEM, BSEE, and NMFS	
MMST-4	Establishment of foundation pile-driving measures	The following measures apply to all foundation pile driving activities: 1. Time of Day Restrictions: Foundation pile-driving may commence only during daylight hours unless an Alternative Monitoring Plan has been submitted and approved (see MMST-1). Foundation pile-driving may begin no earlier than 1 hour after (civil) sunrise. Foundation pile-driving may not be initiated any later than 1.5 hours before (civil) sunset. Foundation pile-driving may continue after dark only when the installation of the same pile began during daylight hours (1.5 hours before civil sunset), when clearance zones were fully visible for at least 30 minutes and only when they must proceed for human safety or installation feasibility reasons. 2. The Lessee must deploy at least two PSOs on duty on the foundation pile-driving platform, or nearby construction vessel in the immediate vicinity of the foundation pile-driving platform, at all times during foundation pile-driving to visually monitor for marine mammals. 3. Monitoring must take place from 30 minutes immediately prior to initiation of foundation pile-driving activity through 30 minutes post-completion of foundation pile-driving activity. 4. For all foundation pile-driving activity, the Lessee must follow designated clearance zones. 5. Foundation pile-driving may only commence when the clearance zones are fully visible (e.g., not obscured by darkness, rain, fog), unless an Alternative Monitoring Plan (see MMST-1) has been submitted and approved, and only when clearance zones are clear of marine mammals for at least 30 minutes immediately prior to foundation pile-driving, as determined by the lead PSO. 6. If a marine mammal is visually detected entering or within designated shutdown zones after foundation pile-driving has commenced, a shutdown of foundation pile-driving must be implemented. 7. Following a shutdown, foundation pile-driving may not commence until appropriate conditions (i.e., measures 1–5 above) have been met. 8. Pile-driving of wind turbine foundations and OSSs in the wind development area must not occur from January 1 through April 30. Impact pile-driving must not occur in December unless unanticipated delays due to weather or technical problems arise, notified to and approved by BOEM, that necessitate extending impact pile-driving into December. **For sea turtles:** To ensure that foundation pile-driving operations are carried out in a way that minimizes the exposure of listed sea turtles to noise that may result in injury or behavioral disturbance, PSOs will establish a 1,640-foot (500-meter) shutdown zone for all foundation pile-driving activities. Adherence to the 1,640-foot (500-meter) shutdown zones must be reflected in the PSO reports. Any visual detection of sea turtles within the 1,640-foot (500-meter) shutdown zones must trigger the required shutdown in pile installation. Upon a visual detection of a sea turtle entering or within the shutdown zone during foundation pile-driving, the Lessee must shut down the pile-driving hammer (unless activities must proceed for human safety or for concerns of installation feasibility) from when the PSO observes, until: 1. The lead PSO verifies that the animal(s) voluntarily left and headed away from the clearance area; or	Marine Mammals, Sea Turtles	BOEM, BSEE, and NMFS	✓

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		2. 30 minutes have elapsed without re-detection of the sea turtle(s) by the lead PSO. Additionally, if shutdown is called for but the Lessee determines shutdown is not technically feasible due to human safety concerns or to maintain installation feasibility, reduced hammer energy must be implemented when the lead engineer determines it is technically feasible to do so.			
MMST-5	PSO coverage of expanded clearance/shutdown zones	Lessees must ensure that if the clearance and/or shutdown zones are expanded, PSO coverage is sufficient to reliably monitor the expanded clearance and/or shutdown zones. Additional observers must be deployed on additional platforms for every 4,921 feet (1,500 meters) that a clearance or shutdown zone is expanded beyond the distances modeled prior to verification.	Marine Mammals, Sea Turtles	BOEM, BSEE, and NMFS	✓
MMST-6	Pile-driving visibility requirements	PSOs must have effective visual monitoring in all directions, and pile-driving must not commence until all clearance zones are fully visible (i.e., are not obscured by darkness, rain, fog, etc.) for at least 30 minutes. Unless otherwise authorized under an approved Alternative Monitoring Plan, construction activities must not be initiated until the full extent of all clearance zones are fully visible if conditions (e.g., darkness, rain, fog) prevent the visual detection of marine mammals in the clearance zones. The lead PSO will make a determination as to when there is sufficient light to ensure effective visual monitoring can be accomplished in all directions. The Lessee must develop and implement measures for alternative monitoring in the event that poor visibility conditions unexpectedly arise, and pile-driving cannot be stopped due to safety or operational feasibility. The Lessee must operate according to the Alternative Monitoring Plan (see MMST-1). This plan will include deploying additional observers; alternative monitoring technologies such as night vision, thermal, and infrared technologies; or use of PAM with the goal of ensuring the ability to maintain all clearance and shutdown zones for all ESA-listed species in the event of unexpected poor visibility conditions.	Marine Mammals, Sea Turtles	BOEM, BSEE, and NMFS	✓
MMST-7	PSO coverage and training requirements	Lessees must ensure that PSO coverage is sufficient to reliably detect whales and sea turtles at the surface in clearance and shutdown zones to execute any pile-driving delays or shutdown requirements. If, at any point prior to or during construction, the PSO coverage that is included as part of the Proposed Action for the COP NEPA analysis is determined not to be sufficient to reliably detect ESA-listed whales and sea turtles within the clearance and shutdown zones, additional PSOs and/or platforms will be deployed. Determinations prior to construction will be based on review of the Pile-Driving Monitoring Plan. Determinations during construction will be based on review of the weekly pile-driving reports and other information, as appropriate. PSOs must be provided by a third-party provider. While on duty, PSOs must have no tasks other than to conduct observational effort, collect and report data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards). PSOs and/or PAM operators must have completed a commercial PSO training program for the Atlantic with an overall examination score of 80% or greater (Baker et. Al 2013).[2] Training certificates for individual PSOs must be provided to BOEM upon request. PSOs and PAM operators must be approved by NMFS prior to the start of a survey. Application requirements to become an NMFS-approved PSO for construction activities can be found at https://www.fisheries.noaa.gov/new-england-mid-atlantic/careers-and-opportunities/protected-species-observers, or for geophysical and geotechnical surveys by sending an inquiry to nmfs.psoreview@noaa.gov. The Lessee must provide to BOEM, upon request, documentation of NMFS approval for individual PSOs. For the following activities, lead PSOs must be deployed as part of the minimum number of PSOs as follows: at least one lead PSO must be on duty at any given time as the lead PSO or PSO monitoring coordinator during pile-driving; at least one lead PSO must be present on each HRG survey vessel; PSOs on transit vessels must be trained, but do not need to be authorized as a lead PSO. Any required lead PSOs must have prior approval from NMFS to be a lead or unconditionally approved PSO. PSOs on duty must be clearly listed on daily data logs for each shift. A sufficient number of PSOs must be deployed to record data in real time and effectively monitor the affected area for the project, including visual surveys in all directions around a pile, PAM, and continuous monitoring of sighted NARWs in the area to meet the number of PSOs required for enhanced seasonal monitoring requirements. PSOs must not be on watch for more than 4 consecutive hours, with at least a 2-hour break after a 4-hour watch. PSOs must not work for more than 12 hours in any 24-hour period (Baker et. Al 2013) unless an alternative schedule is approved by BOEM. Visual monitoring must occur from the most appropriate vantage point on the associated operational platforms that allows for 360-degree visual coverage around a vessel.	Marine Mammals, Sea Turtles	BOEM, BSEE, and NMFS	✓

[2] Baker, K., Epperson, D., Gitschlag, G. R; Goldstein, H., Lewandowski, J., Skrupky, K., Smith, B., Turk, T. 2013. National standards for a Protected Species Observer and Data Management Program : a model using geological and geophysical surveys. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. NOAA technical memorandum NMFS-OPR.

Measure ID[1]	Measure Name	Description	Resource Area Mitigated	Anticipated Enforcing Agency	Previously Applied as a COP Term and Condition
		The Lessee must ensure that suitable equipment is available to PSOs including binoculars, range-finding equipment, a digital camera, and electronic data recording devices (e.g., a tablet) to adequately monitor the distance of the clearance and shutdown zones, to determine the distance to protected species during surveys, to record sightings and verify species identification, and to record data. Observations must be conducted while free from distractions and in a consistent, systematic, and diligent manner.			
MMST-9	Vessel crew and Protected Species Observer (PSO) training requirements	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 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. 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.	Marine Mammals, Sea Turtles	BOEM and BSEE	✓
MMST-10	PSO reporting requirements for pile-driving shutdown events	Within 24 hours, the Lessee must report to BOEM (renewable_reporting@boem.gov) and BSEE (TIMSWeb and protectedspecies@bsee.gov) all marine mammals and/or sea turtles in the shutdown zone that resulted in a shutdown or a power-down as well as when a shutdown or power-down was requested but not implemented due to safety/operations preventing a shutdown from occurring. In addition, the PSO provider must submit the daily data report (raw data collected in the field) and must include the daily PSO reporting requirements as described in MUL-32.	Marine Mammals, Sea Turtles	BOEM, BSEE, and NMFS	✓
MMST-12	Marine mammal and sea turtle geophysical survey clearance and shutdown zones and mitigations	The following pre-start clearance and shutdown zones shall be implemented when the following sources are in use: bubble guns, 1- and 2-plate boomers, and high-powered sparkers. The following sources would not require such mitigations: • Multibeam echosounders (hull-mounted or portable) • Side-scan sonars • Hull-mounted non-parametric SBPs (e.g., Knudsens) • Parametric shallow penetration SBPs (e.g., Innomars) • Fathometers for navigation • Towed non-parametric SBPs/Chirp systems (e.g., Edgetech 424, Edgetech 512i) • EK60/EK80 split-beam echosounders • 3-plate boomers • Pingers (acoustic locators) for locating over the side wireline instrumentation in the water column • Acoustic releases (brief duration pinging), e.g., for moorings, landers, OBS • Ultra-short baseline (USBL) and long baseline (LBL) positioning equipment, e.g., for navigation of submersibles, ROVs. • All acoustic Doppler current profiling (ADCP) equipment • All instrumentation on HOV/AUV/ROVs • Pressure-equipped inverted echo sounders (PIES) and Pressure Monitoring Transducers (PMTs) • Electromagnetic sources • All instruments operated at 180 kHz or greater A minimum of one PSO must be on duty during daylight hours: 30 minutes before sunrise to 30 minutes after sunset (see specific details on PSO requirements below). The PSO must observe the pre-start clearance zone for 30 minutes before sound sources are turned on and must maintain watch while sound sources are active. If an animal is detected within the pre-start clearance zone, it must be observed exiting before the source can be turned on, or if not detected, the team must wait 30 minutes, with no other detections within the pre-start clearance zone, before the sources may be turned on. When sound sources are turned on, the operator should use a “ramp-up” procedure if possible: sources should be at half power for 5 minutes, before proceeding to full power. If the acoustic source is shut down for less than 30 minutes for reasons other than implementation of prescribed mitigation (e.g., mechanical difficulty), it may be activated again without ramp-up if PSOs have	Marine Mammals, Sea Turtles	BOEM, BSEE, and NMFS	✓

Measure ID[1]	Measure Name	Description	Resource Area Mitigated	Anticipated Enforcing Agency	Previously Applied as a COP Term and Condition
		maintained constant visual observation and no detections of protected species have occurred within their respective shutdown zones. For any longer shutdown, pre-start clearance observation and ramp-up are required. If an animal enters its respective shutdown zone while the source is active, the source must be immediately shut down. If the shutdown was a result of a marine mammal, the source may be reactivated after the animal has been observed exiting the pre-clearance zone, or, if not detected, the team must wait 30 minutes before the source may be turned back on with no detections within the shutdown or pre-start clearance zones. For sea turtles, there is no need to wait for the turtle to leave the pre-start clearance zone and no need to wait 30 minutes if not detected after the initial sighting before turning the source back on after a shutdown (i.e., it can be considered a brief "pause"). Shutdowns are not required for dolphins, porpoises, and pinnipeds. The pre-start clearance zone shall be 328 feet (100 meters) for all marine mammals and sea turtles, but under certain circumstances, a zone of 1,640 feet (500 meters) shall be used. These circumstances include detection of a NARW, beaked whales, dwarf and pygmy sperm whales, any baleen or sperm whale with a calf, and any group of six or more baleen whales or sperm whales. Observers must use accurate distance finding methods (e.g., reticle binoculars, range finding sticks, calibrated video cameras, and software) during their observations. Ramp-up may occur at times of poor visibility, including nighttime, if appropriate visual monitoring has occurred with no detections of protected species in the 30 minutes prior to beginning ramp-up. Acoustic source activation may only occur at night where operational planning cannot reasonably avoid such circumstances.			
MMST-13	Vessel speed requirements November 1 through May 14	From November 1 through May 14, all vessels must travel at 10 knots (18.5 kilometers per hour) or less when transiting to/from or within the wind development area, with the exception of crew transfer vessels as described below. From November 1 through May 14, crew transfer vessels may travel at more than 10 knots (18.5 kilometers per hour) if there is at least one visual observer on duty at all times aboard the vessel to visually monitor for large whales and real-time PAM is conducted. If a NARW is detected via visual observation or PAM within or approaching the transit route, all crew transfer vessels must travel at 10 knots (18.5 kilometers per hour) or less for the remainder of that day.	Marine Mammals, Sea Turtles	BOEM, BSEE, and NMFS	
MMST-14	Vessel strike mitigation measures for marine mammals and sea turtles	The Lessee must ensure that vessel operators and crews maintain a vigilant watch for all marine mammals and sea turtles and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any such animals if it is safe to do so. Visual observers monitoring the vessel strike avoidance zone can be either PSOs or trained crew members (if PSOs are not required) and must be posted during all times a vessel is underway (transiting or surveying). If the trained lookout is a vessel crew member, this 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. Additionally, all vessel crew members must be briefed in the identification of ESA-listed species and marine mammals that may occur in the area and in regulations and best practices for avoiding vessel collisions, as well as the expectations and process for reporting. All observations must be recorded per reporting requirements. Vessel personnel must do the following to avoid causing injury or death to marine mammals and sea turtles: • Maintain a vigilant watch for marine mammals and sea turtles and slow down or stop their vessel to avoid striking protected species. • Notify the vessel captain of any whale within 1,640 feet (500 meters) of the vessel and immediately implement strike-avoidance procedures to maintain a separation distance of 1,640 feet (500 meters) from all listed species of whales including changing vessel direction or reducing vessel speed to allow the animal to travel away from the vessel. Any time a listed whale is within 656 feet (200 meters) of an underway vessel, a full stop is required if safety permits. If a whale is observed but cannot be confirmed as a species other than a NARW, the vessel operator must assume that it is a NARW and take appropriate action to avoid the animal. • When sea turtles, small cetaceans, or seals are sighted, attempt to maintain a minimum separation distance of 164 feet (50 meters) to the maximum extent practicable with an exception made for those animals that approach the vessel. The vessel must act as necessary to avoid violating the separation distance (e.g., attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If animals are sighted within the separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. • Vessels underway must not divert their course to approach any listed species. • Regardless of vessel size, vessel operators must reduce vessel speed to 10 knots (18.5 kilometers per hour) or less while operating in any Seasonal Management Area (SMA) and Dynamic Management Area (DMA) (or Slow Zone otherwise designated as a DMA). • All vessel operators must check for information regarding mandatory or voluntary ship strike avoidance (DMAs and SMAs) and daily information regarding NARW sighting locations. These media may include, but are not limited to: NOAA weather radio, USCG NAVTEX and channel 16 broadcasts, Notices to Mariners, the Whale Alert app, or WhaleMap website. NARW Sighting Advisory System info can be accessed at https://whalemap.org/WhaleMap/.	Marine Mammals, Sea Turtles	BOEM, BSEE, and NMFS	✓

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		• Reduce vessel speed to 10 knots (18.5 kilometers per hour) or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near an underway vessel when safety permits. A single cetacean at the surface may indicate the presence of submerged animals in the vicinity of the vessel; therefore, precautionary measures should always be exercised. The only exception to these requirements is when the safety of the vessel or crew necessitates deviation from these requirements. If a vessel strike incident occurs, it must be reported within 24 hours according to appropriate requirements. The Lessee may file for consideration by a request for a waiver of any of these restrictions by submitting a vessel strike risk reduction plan that details revised measures along with an analysis to demonstrate that the measure(s) will provide a level of risk reduction at least equivalent to the measure(s) being proposed to be replaced. The plan must be provided at least 120 days prior to a request for approval and will not be implemented until approved.			
MUL-1	Marine debris awareness and elimination	"Marine trash and debris" is defined as any object or fragment of wood, metal, glass, rubber, plastic, cloth, paper or any other solid, human-made item or material that is lost or discarded in the marine environment by the Lessee or an authorized representative of the Lessee (collectively, the "Lessee") while conducting activities on the OCS in connection with a lease, grant, or approval issued by the BOEM or BSEE. To understand the type and amount of marine debris that may be generated, and to minimize the risk of entanglement in and/or ingestion of marine debris by protected species, the Lessee must implement the following: 1. Training: All vessel operators, employees, and contractors performing OCS survey activities on behalf of the Lessee (collectively, "Lessee Representatives") must complete marine trash and debris awareness training annually. The training consists of two parts: (1) viewing a marine trash and debris training video or slide show (described below) and (2) receiving an explanation from management personnel that emphasizes their commitment to the requirements. The marine trash and debris training videos, training slide packs, and other marine debris related educational material may be obtained at https://www.bsee.gov/debris. The training videos, slides, and related material may be downloaded directly from the website. Lessee representatives engaged in OCS survey activities must continue to develop and use a marine trash and debris awareness training and certification process that reasonably assures that they, as well as their respective employees, contractors, and subcontractors, are in fact trained. The training process must include the following elements: (a) viewing of either a video or slide show by the personnel specified above, (b) an explanation from management personnel that emphasizes their commitment to the requirements, (c) attendance measures (initial and annual), and (d) recordkeeping and availability of records for inspection by BSEE. 2. By January 31 of each year, the Lessee must submit to BSEE an annual report signed by the Lessee that describes its marine trash and debris awareness training process and certifies that the training process has been followed for the previous calendar year. The Lessee must send the reports via TIMSWeb and a notification email to BOEM (renewable_reporting@boem.gov) and BSEE (marinedebris@bsee.gov). 3. Marking: Materials, equipment, tools, containers, and other items used in OCS activities that are of such shape or configuration that are 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 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. 4. Recovery: Lessees must recover marine trash and debris that is lost or discarded in the marine environment while performing OCS activities when such incident is likely to: (a) cause undue harm or damage to natural resources, including their physical, atmospheric, and biological components, with particular attention to those that could result in the entanglement of or ingestion by marine protected species; or (b) significantly interfere with OCS uses (e.g., are likely to snag or damage fishing equipment, or present a hazard to navigation). Lessees must notify BSEE when recovery activities are (i) not possible because conditions are unsafe or (ii) not practicable because the marine trash and debris released is not likely to result in any of the conditions listed in (a) or (b) above. 5. The Lessees must recover the marine trash and debris lost or discarded if BSEE does not agree with the reasons provided by the Lessee as to why it should be relieved from the obligation to recover the marine trash and debris. If the marine trash and debris is lost or discarded within the boundaries of a potential archaeological resource/avoidance area, or a sensitive ecological/benthic resource area, the Lessee must contact BSEE for approval prior to conducting any recovery efforts. Recovery of the marine trash and debris should be completed immediately, but no later than 30 days from the date in which the incident occurred. If the Lessee is not able to recover the marine trash or debris within 48 hours, the Lessee must submit a recovery plan to BSEE explaining the recovery activities to recover the marine trash or debris ("Recovery Plan"). 6. The Recovery Plan must be submitted no later than 10 calendar days from the date in which the incident occurred. Unless otherwise objected to by BSEE within 48 hours of the submittal listed as In Review status in TIMSWeb, the Lessee can proceed with	Benthic; Finfish, Invertebrates, and EFH; Marine Mammals; Water Quality; Sea Turtles	BOEM and BSEE	✓

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		the activities described in the Recovery Plan. The Lessee must request and obtain approval of a time extension if recovery activities cannot be completed within 30 days from the date in which the incident occurred. The Lessee must enact steps to prevent similar incidents and must submit a description of these actions to BOEM and BSEE within 30 days from the date on which the incident occurred. 7. Reporting: The Lessee must report all marine trash and debris lost or discarded to BSEE (using the email address listed on BSEE's most recent incident reporting guidance). This report applies to all marine trash and debris lost or discarded, and must be made monthly, no later than the fifth day of the following month. The report must include the following: a. Project identification and contact information for the Lessee, operator, and/or contractor; b. Date and time of the incident; c. The lease number, OCS area and block, and coordinates of the object's location (latitude and longitude in decimal degrees); d. A detailed description of the dropped object to include dimensions (approximate length, width, height, and weight) and composition (e.g., plastic, aluminum, steel, wood, paper, hazardous substances, or defined pollutants); e. Pictures, data imagery, data streams, and/or a schematic/illustration of the object, if available; f. Indication of whether the lost or discarded item could be a magnetic anomaly of greater than 50 nanotesla (nT), a seafloor target of greater than 1.6 feet (0.5 meter), or a sub-bottom anomaly of greater than 1.6 feet (0.5 meter) when operating a magnetometer or gradiometer, side scan sonar, or sub-bottom profile in accordance with BSEE's applicable guidance; g. An explanation of how the object was lost; and h. A description of immediate recovery efforts and results, including photos. In addition to the foregoing, the Lessee must submit a report within 48 hours of the incident ("48-hour Report") if the marine trash or debris could: a. Cause undue harm or damage to natural resources, including their physical, atmospheric, and biological components, with particular attention to those that could result in the ingestion by or entanglement of marine protected species; or b. Significantly interfere with OCS uses (e.g., are likely to snag or damage fishing equipment, or present a hazard to navigation). The information in the 48-hour Report would be the same as that listed above, but just for the incident that triggered the 48-hour Report. The Lessee must report to BSEE if the object is recovered and, as applicable, any substantial variation in the activities described in the Recovery Plan that were required during the recovery efforts. Information on unrecovered marine trash and debris must be included and addressed in the description of the site clearance activities provided in the decommissioning application required under 30 CFR 585.906. The Lessee is not required to submit a report for those months in which no marine trash and debris was lost or discarded.			
MUL-2	Anchoring plan	Lessees must submit an anchoring plan for all areas where anchoring is being used during construction, operations, and decommissioning to avoid or minimize impacts on sensitive habitats, including hardbottom and structurally complex habitats. The plan will require that the Lessee consider any new data on benthic habitats and cultural resources to avoid/minimize impacts on these resources to the maximum extent practicable. The anchoring plan must include the planned location of anchoring activities, sensitive habitats and locations, seabed features, potential hazards, and any related facility installation activities such as cables, WTGs, and OSSs, as appropriate. It will require all vessels deploying anchors to use, whenever feasible and safe, mid-line anchor buoys to reduce the amount of anchor chain or line that touches the seafloor. The Lessee must provide the anchoring plan to BOEM and BSEE to coordinate with NMFS 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 to BOEM and BSEE's satisfaction before conducting any OCS seabed-disturbing activities that require anchoring. For operations and decommissioning, the Lessee must provide proposed anchoring plats to BOEM and BSEE for review and concurrence before anchoring activities occur. The proposed anchoring plats must include avoidances identified above and as-placed anchor plats must be submitted to BOEM and BSEE within 90 days of completion of an activity (including during operations) or construction of a major facility component (e.g., buoys, export cable installation, WTG or OSS installation and interarray cable installation) or decommissioning to demonstrate that seabed-disturbing activities complied with avoidance requirements for seabed features and hazards, archaeological resources, and/or anomalies. As-placed plats must show 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 seabed for all seabed-disturbing activities. The plats must be at a scale of 1 inch = 1,000 feet (300 meters) with Differential GPS accuracy.	Benthic; Commercial and For-Hire Fishing; Finfish, Invertebrates, and EFH; Water Quality	BOEM, BSEE, and NMFS	✓
MUL-3	Berm survey and report	Where plows, jets, grapnel runs, or other similar methods are used, post-construction surveys capable of detecting bathymetry changes of 1.6 feet (0.5 meter) or less must be completed to determine the height and width of any created berms. If there are bathymetric	Benthic; Finfish, Invertebrates, and EFH	BOEM and BSEE	✓

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		changes in berm height greater than 3.3 feet (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 COP-specific NEPA 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 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.			
MUL-4	Final cable protection in hardbottom	Cable protection measures within complex hardbottom habitat must consist of natural or engineered stone that does not inhibit epibenthic growth and provides three-dimensional complexity, both in height and in interstitial spaces. The Lessee will also be required to consider nature-inclusive designs for optimized cable protection (Hermans et al. 2020),[3] including those that consist of natural materials that mimic the surrounding seafloor. The Lessee must coordinate with NMFS and BOEM prior to the implementation of hardbottom cable protection measures. BOEM will make recommendations regarding the final selection of engineered stone in coordination with NMFS. The effectiveness of natural and engineered stone as a mitigation measure will be evaluated/monitored as a component of a finalized benthic monitoring plan.	Benthic; Finfish, Invertebrates, and EFH	BOEM, BSEE, and NMFS	✓
MUL-5	Low noise best practices	For onshore and offshore project activities and across all phases of construction and operations, operators should use equipment, technology, and best practices that produce the least amount of noise practicable to avoid and minimize noise impacts on the environment. See the following as examples: low noise foundation (MUL-6), vessel noise reduction BMP (MUL-7), and the received sound level limit (MUL-22).	Bats; Benthic; Birds; Coastal Habitat and Fauna; Commercial and For-Hire Fishing; Finfish, Invertebrates, and EFH; Land Use and Coastal Infrastructure; Marine Mammals; Recreation and Tourism; Sea Turtles	Voluntary	
MUL-6	Low noise foundations	BOEM encourages the use of low noise practices in foundation installation. The use of non-pile-driving foundation types should be considered first. If not practicable, then the use of the best available quieting technology should be applied to reach the received sound level limit (MUL-22).	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	Voluntary	
MUL-7	Vessel noise reduction guidelines	The Lessee should, to the extent reasonable and practicable, follow the most current International Maritime Organization's (IMO) Guidelines for the reduction of underwater radiated noise, including propulsion noise, machinery noise and dynamic positioning systems of any vessel associated with the project.	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	Voluntary	
MUL-8	Gear identification	To facilitate identification of gear on any entangled animals, all trap/pot gear used in the surveys must be uniquely marked to distinguish it from other commercial or recreational gear. Using yellow and black striped duct tape, place a 3-foot-long mark within 2 fathoms of a buoy. In addition, using black and white paint or duct tape, place three additional marks on the top, middle, and bottom of the line. These gear marking colors are proposed as they are not gear markings used in other fisheries and are therefore distinct. Any changes in marking would not be made without notification and approval from NMFS.	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	✓
MUL-9	Lost survey gear	If any survey gear is lost, all reasonable efforts that do not compromise human safety must be undertaken to recover the gear. All lost survey gear must be reported to NMFS (nmfs.gar.incidental-take@noaa.gov) and BSEE (marinedebris@bsee.gov) within 24 hours of the documented time of missing or lost gear. This report must include information on any markings on the gear and any efforts undertaken or planned to recover the gear.	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	✓
MUL-10	Data collection PDC and BMPs	Lessees must ensure that all PDCs and BMPs included in BOEM's Project Design Criteria (PDC) and Best Management Practices (BMPs) for Protected Species Associated with Offshore Wind Data Collection (or any subsequent updated versions of this document) found here: https://www.boem.gov/sites/default/files/documents//PDCs%20and%20BMPs%20for%20Atlantic%20Data%20Collection%20112220221.pdf are applied to activities associated with the construction, maintenance, and operations of the project, including all post-lease geophysical and geotechnical surveys carried out over the life of the lease, as applicable. These PDCs and BMPs collectively implement the ESA requirements for these offshore wind activities on the Atlantic OCS as of June 29, 2021.	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	

[3] Hermans, A, Bos, O.G., Prusina, I. 2020. Nature-Inclusive Design: a catalogue for offshore wind infrastructure. Technical Report 114266/20-004.274. The Ministry of Agriculture, Nature and Food Quality, Netherlands.

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MUL-12	Ecological design elements	Lessees are encouraged to incorporate ecological design elements into the project design where practicable. For example, nature-inclusive design products are an alternative to traditional concrete that enhance or encourage the growth of flora or fauna when placed in a marine environment and could result in reduced GHG emissions compared to traditional concrete. Another example is using nature-based scour protection such as oyster beds or artificial reefs.	Air Quality and Greenhouse Gas Emissions; Benthic; Coastal Habitat and Fauna; Commercial and For-Hire Fishing; Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	Voluntary	
MUL-13	Protected Species Training for trawl and trap survey staff	Lessees must ensure that at least one of the survey staff onboard the trawl surveys and ventless trap surveys has completed Northeast Fisheries Observer Program training (within the last 5 years) or other training in protected species identification and safe handling (inclusive of taking genetic samples from Atlantic sturgeon). Reference materials for identification, disentanglement, safe handling, and genetic sampling procedures must be available on board each survey vessel. The Lessee must prepare and submit to BOEM and BSEE a training plan that addresses how this requirement will be met, and the plan must be submitted to NMFS in advance of any trawl or trap surveys. This requirement is in place for any trips where gear is set or hauled.	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	
MUL-14	UXO avoidance	Lessees should develop and implement standard protocols for addressing unexploded ordnance (UXOs), including implementation of best available technology to avoid or minimize exposure of protected species and sensitive habitats. Where *in situ* disposal is demonstrated to be necessary for the project, the Lessee should consult with state and federal agencies regarding seasonal restriction windows or other precautions. The Lessee must avoid, to the maximum extent practicable, interactions with UXO/Munitions and Explosives of Concern (MEC). If avoidance is not possible, submitted plans should follow all guidance (see Munitions and Explosives of Concern Survey Methodology and In-Field Testing for Wind Energy Areas on the Atlantic Outer Continental Shelf (pnnl.gov) at: https://tethys.pnnl.gov/sites/default/files/publications/Carton-et-al-2017-BOEM.pdf; Supporting National Environmental Policy Act Documentation for Offshore Wind Energy Development Related to Munitions and Explosives of Concern and Unexploded Ordinances (MEC-UXO White Paper [boem.gov]) at: https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/MEC-UXO%20White%20Paper.pdf; and when finalized, the US Committee on the Marine Transportation System general guidance addressing MEC at: https://www.cmts.gov/assets/uploads/documents/DOT-OST-2023-0117-0001_attachment_1.pdf; or any other applicable regulation regarding interaction with UXO/MEC.	Commercial and For-Hire Fishing; Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, USEPA, and U.S. Navy	
MUL-15	Marine debris monitoring around WTG	Lessees must monitor and adaptively mitigate impacts associated with commercial, charter, and recreational gear lost from expected increases in fishing around WTG foundations by surveying at least 10 of the WTGs located closest to shore in the lease area annually. Surveys by remotely operated vehicles, divers, or other means will inform frequency and locations of marine debris. The results of the surveys will be reported to BOEM (renewable_reporting@boem.gov) and BSEE (marinedebris@bsee.gov) in an annual report submitted by April 30 for the preceding calendar year in which the survey is performed. Photographic and videographic materials must be provided on a drive. Reports must include daily survey reports that include the survey date, 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). Required data and reports may be archived, analyzed, published, and disseminated by BOEM.	Benthic; Commercial and For-Hire Fishing; Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM and BSEE	✓
MUL-16	Post-storm event monitoring plan	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 on the environment.	Benthic; Commercial and For-Hire Fishing; Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM and BSEE	✓
MUL-18	Shared transmission corridor	Lessees should coordinate transmission infrastructure among projects. Where practicable, transmission infrastructure should use shared intra- and interregional connections, have requirements for meshed infrastructure, apply parallel routing with existing and proposed linear infrastructure (including export cables and other existing infrastructure such as power and telecommunication cables,	Benthic; Coastal Habitat and Fauna; Commercial and For-Hire Fishing;	Voluntary	

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		pipelines), and limit the combined footprint to minimize impacts and maximize potential capacity. Where possible, incorporate cable siting principles and routing measures for export cables and associated substations developed from the Atlantic Offshore Wind Transmission Study and the BOEM/DOE transmission planning effort, the NYSERDA's Offshore Wind Cable Corridor Constraints Assessment,[4] associated NYS Public Service Commission orders, and the results of other state and ISO/RTO transmission planning processes, to maximize the utility of Points of Interconnection (POIs). Lessees considering landfall in New Jersey should also comply with the results of the state agreement approach (SAA)[5] and any other future procurements resulting from similar initiatives.	Cultural Resources; Finfish, Invertebrates, and EFH; Marine Mammals; Navigation and Vessel Traffic; Sea Turtles; Wetlands		
MUL-19	Post-installation cable monitoring	The Lessee must conduct an inspection of each interarray, interconnector, and export cable to determine cable location, burial depths, the state of the cable, and site conditions within 6 months, following installation of a cable segment, and additional inspections within 1 year following completion of the initial post-construction inspection, and every 3 years thereafter. These surveys must also be conducted within 180 days of a storm event (as defined by the post-storm event monitoring plan, described in MUL-16). The Lessee must provide BSEE and BOEM with a cable monitoring report within 90 days following each inspection. Inspections of the interarray and export cables must include HRG methods, involving, for example, multibeam bathymetric survey equipment; and identify seabed features, natural and human-made hazards, and site conditions along federal sections of the cable routing. • 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. • 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 TIMS Web 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. • 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 TIMS Web 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.	Benthic; Commercial and For-Hire Fishing; Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	✓
MUL-20	Soft start for impact pile-driving	Lessees must implement soft start techniques for any impact pile-driving. The soft start must include a minimum of 20 minutes of 4–6 strikes/minute at 10–20% of the maximum hammer energy but should not exceed the Received Sound Level Limit. Soft start is required at the beginning of driving a new pile and at any time following the cessation of impact pile-driving for 30 minutes or longer.	Benthic; Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	✓
MUL-21	Use of new and emerging technology [6]	Where practicable, Lessees are encouraged to employ best available technology or other measures to avoid or minimize potential impacts in both offshore and nearshore environments, including adopting new and emerging technologies. Examples include the use of jet plows, closed loop cooling systems, trenchless technology, gravity-based structures or foundation designs that do not rely on pile-driving, and MERLIN radar systems. In addition, Lessees should explore opportunities to upgrade/retrofit equipment to the best available technology if it becomes available during project operations.	Bats; Benthic; Birds; Coastal Habitat and Fauna; Commercial and For-Hire Fishing; Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles, Water Quality	Voluntary	
MUL-22	Received Sound Level Limit (RSLL)	Sound fields generated during impact pile-driving must not exceed NOAA Fisheries' Level A permanent threshold shift (PTS) limits for low frequency cetaceans (LFC) by the specified date and at the distances below. Every attempt must be made to reach the Received Sound Level Limit (RSLL) at 100% of foundations. ***Voluntary***: • May 1, 2025: After the first three foundations, no exceedance of RSLL beyond 4,921 feet (1,500 meters) from the foundation for 90% of remaining piles.	Benthic; Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	

[4] For a list of specific cable siting principles, refer to Section 4.1 in the Offshore Wind Cable Corridor Constraints Assessment at: https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Offshore-Wind/2306-Offshore-Wind-Cable-Corridor-Constraints-Assessment--completeacc.pdf.

[5] https://www.nj.gov/bpu/pdf/boardorders/2022/20221026/8A%20ORDER%20State%20Agreement%20Approach.pdf.

[6] Appendix B, *Supplemental Information and Additional Figures and Tables*, Section B.9 describes examples of new and emerging technologies that Lessees could research and consider for adoption as part of MUL-21.

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		Required: • May 1, 2026: After the first three foundations, no exceedance of RSLL beyond 4,921 feet (1,500 meters) from the foundation for 90% of remaining piles. • May 1, 2028: After the first three foundations, no exceedance of RSLL beyond 3,280 feet (1,000 meters) from the foundation for 90% of remaining piles. • May 1, 2030: After the first three foundations, no exceedance of RSLL beyond 2,460 feet (750 meters) from the foundation for 90% of remaining piles. On a case-by-case basis, BOEM may consider an exception to the RSLL if the Lessee provides sufficient written justification, as determined by BOEM, of why meeting the RSLL is not technically and commercially practicable. In these cases, compensatory mitigation (or similar) may be considered, such as operator contributions to research and monitoring, or similar, that reduce noise or contribute to a better understanding of noise reduction.			
MUL-23	Adjust project design to reduce impacts	Lessees must consider how to avoid or reduce potential impacts on important environmental resources, including sensitive habitats (e.g., Mid-Shelf Scarp, NJDEP-designated prime fishing grounds, hardbottom, SAV, ledges), by adjusting project design. Lessees must demonstrate this consideration through their initial COP submission or subsequent updated versions. At a minimum, project design adjustment considerations must include: • Utilizing shared cable crossing positions to reduce the overall seabed footprint and quantity of any additional cable protection materials; • Using cable installation methods, such as horizontal directional drilling, that avoid and minimize adverse impacts on sensitive habitats and difficult-to-replace resources; • Avoiding routing export cables through estuaries and embayments to reduce impacts on numerous sensitive habitats and difficult-to-replace resources as well as many sensitive life stages of various species; • Ensuring all mooring systems and ancillary equipment are contained inside the approved lease area to reduce impacts on fishing, navigation, and other uses; • Adjusting turbine layout or co-locating ancillary equipment to avoid sensitive habitats; • Using outputs from marine mammal vessel strike models to inform project design; • Considering all potential WTG positions to allow for flexibility in project design due to identification of sensitive habitats or cultural properties through the environmental review process; and • Using micrositing as a tool for identifying and avoiding sensitive habitats.	Bats; Benthic; Birds; Coastal Habitat and Fauna; Commercial and For-Hire Fishing; Finfish, Invertebrates, and EFH; Marine Mammals; Wetlands; Sea Turtles	BOEM, BSEE, and NMFS	
MUL-24	Adaptive management for NMFS Trust Resources	Lessees must develop an adaptive management plan to resolve unanticipated issues and integrate new information. The adaptive management plan must be finalized prior to initiating construction activities. This plan should include the following: • Defining thresholds above which environmental impacts would be deemed unacceptable and how adaptive management will be implemented for review and approval by BOEM and BSEE; • Adhering to all relevant Time of Year Restrictions (TOYRs) for protected species present in the area and minimizing impacts if work must occur within TOYRs; • Considering no-build migratory routing measures for protected species already under threat, including for the NARW; and • Implementing the precautionary principle for sensitive habitats, including setbacks from important spawning areas, fishery rotational and access management areas, and other critical habitat.	Commercial and For-Hire Fishing; Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM and BSEE	
MUL-25	Consistent turbine layout, markings, and lighting	Lessees should employ consistent turbine grid layouts, spacing, markings, and lighting among lease areas to minimize navigational hazards and facilitate other ocean uses such as fishing and recreational activities. Turbines should have one of the two lines of orientation per lease stipulation spaced at least 1 nautical mile (1.9 kilometers) apart to support navigation safety and Search and Rescue (SAR). This recommended spacing is based on the USCG's 2020 Massachusetts and Rhode Island Port Access Route Study (https://www.navcen.uscg.gov/sites/default/files/pdf/PARS/FINAL_REPORT_PARS_May_14_2020.pdf). The spacing would also preserve structure-free areas to facilitate seabird passage and fishing operations. Also, per lease stipulations, adjacent lease areas that do not adopt the same layout must have an additional setback from shared borders. In accordance with BOEM lighting and marking guidelines, and USCG and FAA lighting and marking requirements, Lessees must ensure that all structures are properly marked and lighted.	Bats, Birds, Commercial and For-Hire Fishing, Marine Mammals, Navigation and Vessel Traffic	BOEM and USCG	
MUL-26	Monitoring plan	Lessees must develop and execute an environmental monitoring plan for resources and parameters that may be impacted by the project's activities (especially where known impacts are expected). This monitoring plan should cover resources that are not covered by	Benthic; Coastal Habitat and Fauna; Commercial	BOEM, BSEE, and NMFS	

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		other resource-specific monitoring plans. The environmental monitoring plan must be finalized prior to initiating construction activities. If the projected impact levels, as informed by future monitoring results, deviate substantially from the effects analysis in the COP NEPA document, the Lessees must transmit to BOEM and BSEE recommendations for new mitigation measures and/or monitoring methods for review and concurrence. The following should be considered: • The monitoring plan should meet regional data requirements and standards, such as ROSA Offshore Wind Project Monitoring Framework and Guidelines, the Regional Wildlife Science Collaborative's Draft Science Plan, and the NMFS/BOEM Federal Survey Mitigation Implementation Strategy, and can include, but not be limited to, monitoring of biological resources, atmospheric and oceanographic conditions, changes to fisheries performance, project-specific monitoring needs, and relevant new and emerging issues. • The monitoring plan should include a description of the potentially affected resources and the efforts that will be made to monitor those resources over time (i.e., pre-, during, and post-construction). • Monitoring efforts should favor approaches that are not extractive or lethal for the resources involved, where practicable, and will be in compliance with appropriate research permitting requirements. • Coordination of monitoring efforts across lease areas in the NY Bight is highly encouraged to maximize efficiencies in monitoring efforts, especially at a regional scale. • Results from monitoring should be made publicly available.	and For-Hire Fishing; Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles		
MUL-27	Minimize sediment disturbance	Lessees must employ methods to minimize sediment disturbance, including, but not limited to, the use of midline buoys to prevent cable sweep, not side-casting materials, and removal and reuse of dredged material for backfill or other beneficial use.	Benthic; Finfish, Invertebrates, and EFH; Water Quality; Sea Turtles	BOEM, BSEE, and NMFS	
MUL-28	Inadvertent Returns (IR) Plan and drilling fluids	Lessees should develop an Inadvertent Returns (IR) Plan to address prevention, control, and clean-up of potential IR, which is the unintended release of drilling fluids to the surface during drilling operations. To the extent practicable, use biodegradable drilling solution, and recirculate and recycle drilling fluids used during HDD construction to minimize required water use. Avoid discharging drilling fluids onto the seabed.	Benthic; Finfish, Invertebrates, and EFH; Water Quality	Voluntary/Outside of BOEM jurisdiction	
MUL-29	Sound Field Verification (SFV) Process, Plan and Reporting	The purpose of the SFV Process is to (1) verify the RSLL has been reached, and (2) document sound propagation from foundation installation for estimating distances to isopleths of potential injury and harassment to verify that the modeled acoustic fields were conservative enough to not underestimate the number of exposures of protected marine life to sounds over regulatory thresholds. **Process** SFV must be conducted at every pile at 2,460 feet (750 meters) (Abbreviated SFV Check). Thorough SFV Monitoring (defined as recording along a minimum of two radials with at least one radial containing three or more recorders) must be conducted for the first three foundations of a project, and when a foundation is to be installed with a substantially different set of values for key parameters including foundation type, pile size, installation method, hammer energy rating, water depth, seabed composition, and season. Further, if levels measured in any SFV (Thorough or Abbreviated) imply the exceedance of authorized ranges to regulatory thresholds (specified by either the RSLL or approvals documents), Thorough SFV Monitoring must be conducted until SFVs from three consecutive foundations demonstrate adherence to the authorized levels following a foundation that exceeds said limit. Further, the Lessee must comply with other Terms and Conditions directing action should SFV-measured ranges exceed those authorized. See Chapter 3 of BOEM's *Nationwide Recommendations for Impact Pile Driving Sound Exposure Modeling and Sound Field Measurement for Offshore Wind Construction and Operations Plans* for more information. **SFV Plan** The Lessee must submit an SFV Plan for review and written approval by BOEM and BSEE (TIMS), in consultation with NMFS and USACE (when applicable) 120 days before the planned commencement of field activities for pile-driving. The SFV Plan must be sufficient to assess sound propagation from the foundation and the distances to isopleths for potential injury and harassment as well as the RSLL, when applicable. The measurements must be compared to the modeled Level A and Level B harassment zones for marine mammals (and the injury and behavioral disturbance zones for sea turtles and Atlantic sturgeon), and the plan should include the target modeled sound levels that each monitored installation is expected to stay below. The SFV Plan should include approximations of the expected variation of the key parameters across the project and an estimate of how many Thorough SFV Monitoring locations will be required to cover this variation. The plan must describe how the Lessee will ensure that the locations selected for Thorough SFV Monitoring are representative of the rest of the foundations of that type to be installed.	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	

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		The plan must include an Abbreviated SFV check, where at minimum, a single recorder is placed, 2,460 feet (750 meters) from the installation of any foundation not requiring Thorough SFV Monitoring to ensure that inherent variability does not result in received levels above what was analyzed within the permitting/authorization/assessment/NEPA process or the RSLL, whichever is smaller. The plan must include measurement procedures and results reporting that meet ISO standard 18406:2017 (Underwater acoustics—Measurement of radiated underwater sound from percussive pile-driving). The plan must include an example reporting template for both Thorough SFV Monitoring and Abbreviated SFV Check. All comments on the SFV Plan must be addressed to BOEM/BSEE's satisfaction before any pile-driving activities can commence. A copy of the approved SFV Plan must be in the possession of and followed by any Lessee designees operating under the authority of the approved COP and carrying out the requirements on site. The submission of raw acoustic data or data products associated with SFV to BOEM may be required. **SFV Reporting** Thorough SFV Monitoring reports must be submitted to BOEM, BSEE (TIMS), NMFS, and USACE (when applicable) within 48 hours of completion of foundation installation. Abbreviated SFV Check reports must also be submitted to BOEM, BSEE (TIMS), NMFS, and USACE (when applicable) but may be submitted in weekly batch reports as long as Abbreviated SFV Check measurements are in compliance with all applicable regulatory thresholds (RSLL, and/or harassment, injury and behavior thresholds). Reports must include modeled and measured distances to isopleths for potential injury and harassment to marine mammals, sea turtles, and sturgeon. The Lessee is referred to the BOEM Nationwide Recommendations for Impact Pile-Driving Sound Exposure Modeling and Sound Field Measurement for Offshore Wind Construction and Operations Plans for other recommendations on what should be contained in the report.			
MUL-30	Strike avoidance and shutdown zones during geophysical surveys	Vessel operators and crews must maintain a vigilant watch for all marine protected species and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any ESA-listed species. The presence of a single species at the surface may indicate the presence of submerged animals in the vicinity; therefore, precautionary measures should always be exercised. A visual observer aboard the vessel must monitor a vessel strike-avoidance zone (species-specific distances detailed below) around the vessel according to the parameters stated below, to ensure the potential for strike is minimized. Minimum separation distances for ESA-listed sea turtles must be monitored at all times and be demarcated within the monitoring zone with effective distance finding methods (e.g., reticle binoculars, range finding sticks, monitoring system software). A 1,640-foot (500-meter) monitoring zone will be established in every direction around each survey vessel. All threatened and endangered species within this distance will be monitored by third-party PSOs and survey operations and listed species data recorded. If a sea turtle is sighted within 328 feet (100 meters) or less of the operating vessel's forward path, the vessel operator must slow down to 4 knots (7.4 kilometers per hour) (unless unsafe to do so) and then proceed away from the turtle at a speed of 4 knots (7.4 kilometers per hour) or less until there is a separation distance of at least 328 feet (100 meters) at which time the vessel may resume normal operations. If a sea turtle is sighted within 164 feet (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 (7.4 kilometers per hour). The vessel may resume normal operations once it has passed the turtle. Visual observers monitoring the vessel strike-avoidance zone can be either third-party PSOs or trained lookouts (dedicated vessel crew), but trained lookouts responsible for these duties must be provided sufficient training to distinguish ESA-listed species to broad taxonomic groups and have no other responsibilities during the time of observation. If the shutdown zones cannot be adequately monitored for animal presence (i.e., a PSO determines conditions are such that ESA-listed species cannot be reliably sighted within the shutdown zones), the survey must be stopped until such time that the shutdown zones can be reliably monitored. This monitoring must be carried out by NMFS-approved PSOs or trained lookouts.	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	✓
MUL-31	Sampling gear removal between seasons	All fisheries sampling gear must be hauled at least once every 30 days, and all gear must be removed from the water and stored on land between survey seasons to minimize risk of entanglement.	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM and BSEE	✓
MUL-32	Daily, weekly, and final PSO reporting requirements (including foundation pile-driving)	PSOs must be previously approved by NMFS to conduct mitigation and monitoring duties for pile-driving activity. An adequate number of PSOs must be used to effectively monitor the area of the clearance and shutdown zones. Data fields must be reported in an electronic CSV format as daily reports during shutdowns and weekly reports during pile-driving and construction. Data categories must include Project, Operations, Monitoring Effort, and Detection. Data must be generated through software applications or otherwise recorded electronically by PSOs. Applications developed to record PSO data are encouraged as long as the data fields listed below can be recorded and exported to Excel. Alternatively, BOEM has developed an Excel spreadsheet with all the necessary data fields that is available upon request from BOEM.	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	✓

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		The third-party PSO providers must submit the daily (if applicable) and weekly monitoring reports to BOEM (renewable_reporting@boem.gov), NMFS (incidental.take@noaa.gov), and BSEE (submittals via TIMSWeb and notification email to protectedspecies@bsee.gov) every Wednesday during construction for the previous week (Sunday through Saturday) of monitoring of pile-driving activity. Daily PSO forms, including electronic effort, survey, and sightings forms, must be submitted to BOEM (renewable_reporting@boem.gov) monthly on the 15th day of each month for the previous calendar month of activities. Required data and reports may be archived, analyzed, published, and disseminated by BOEM. The following should be included in PSO reports: • Detection Information for Protected Species: ○ Date (YYYY-MM-DD) ○ Sighting ID (V01, V02 or sequential sighting number for that day) (multiple sightings of same animal or group should 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 = source on; Off = source off) ○ Latitude (decimal degrees dd.ddddd), Longitude (decimal degrees dd.ddddd) ○ Compass heading of vessel (degrees) ○ Water depth (meters) ○ Swell height (meters) ○ Beaufort scale ○ Precipitation ○ Visibility (km) ○ Cloud coverage (%) ○ Glare ○ Sightings, including common name, scientific name, or family ○ Certainty of identification ○ Number of adults ○ Number of juveniles ○ Total number of animals ○ Bearing to animal(s) when first detected (ship heading + clock face) ○ Range from vessel (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) ○ Detection narrative (note behavior, especially changes in relation to survey activity and distance from source vessel) ○ Direction of travel/first approach (relative to vessel) ○ 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 (HH:MM) ○ Initial heading of animal(s) (degrees) ○ Final heading of animal(s) (degrees) ○ Source activity at initial detection ○ Source activity at final detection (on or off) ○ Shutdown zone size during detection (meters) ○ Was the animal inside the shutdown zone? ○ Closest distance to vessel (reticle distance in meters) ○ Time at closest approach (UTC HH:MM) ○ Time animal entered shutdown zone (UTC HH:MM) ○ Time animal left shutdown zone (UTC HH:MM)			

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		○ If observed/detected during ramp up / power up: First distance (reticle distance in meters), Closest distance (reticle distance in meters), Last distance (reticle distance in meters), Behavior at final detection ○ Shutdown or power-down occurrences ○ Detections with PAM • Monitoring Effort Information for Pile-Driving: ○ Date ○ Effort (On = source on; Off = source off) ○ If visual, how many PSOs on watch at one time? ○ PSOs (Last, First) ○ Start time of observations ○ End time of observations ○ Duration of visual observation ○ Wind speed (knots), from direction ○ Beaufort scale ○ Swell (meters) ○ Water depth (meters) ○ Visibility (km) ○ Glare severity ○ Block name and number ○ Location: latitude and longitude The daily report during shutdown (if applicable) must include the date, time, species, pile identification number, GPS coordinates, time and distance of the animal when sighted, time the shutdown or power-down occurred, behavior of the animal, direction of travel, time the animal left the shutdown zone, time the pile-driver was restarted or powered back up, any photographs that may have been taken, number of animals, closest approach of animal to pile-driving, distance of animal to pile-driving when shutdown was initially requested, and total time animal spent in the shutdown zone. Weekly reports can consist of raw data. Required data and reports provided to BOEM and BSEE may be archived, analyzed, published, and disseminated by BOEM. PSO data must be reported weekly every Wednesday during construction for the previous week (Sunday through Saturday) from the start of visual and/or PAM efforts during pile-driving activities, and every week thereafter until the final reporting period upon conclusion of pile-driving activity. Any editing, review, and quality assurance checks must be completed only by the PSO provider prior to submission to NMFS, BOEM, and BSEE. The Lessee must submit—to BOEM and BSEE at renewable_reporting@boem.gov for BOEM and via TIMSWeb and notification email to protectedspecies@bsee.gov for BSEE—a final summary report of PSO monitoring 90 days following the completion of pile-driving. The following required data fields for the final PSO report should include: • Project Information: ○ Project name ○ Lease number ○ State coastal zones ○ PSO contractor(s) ○ Vessel name(s) ○ Reporting date(s) ○ Visual monitoring equipment used (e.g., bionics, magnification, IR cameras, etc.) ○ 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			

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		○ 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) • 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 visual and PAM monitoring ○ Time power up/ramp up began ○ Time equipment full power was reached ○ Duration of power up/ramp up ○ Time pile-driving began (hammer on) ○ Time pile-driving activity ended (hammer off) ○ Duration of activity ○ Duration of visual observation ○ Wind speed (knots), from direction ○ Swell height (meters) ○ Water depth (meters) ○ Visibility (km) ○ 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) ○ Record any habitat or prey observations ○ Record any marine debris sighted • Detection Information: ○ Date (YYYY-MM-DD) ○ Sighting ID (V01, V02, or sequential sighting number for that day) (multiple sightings of same animal or group uses 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			

Measure ID[1]	Measure Name	Description	Resource Area Mitigated	Anticipated Enforcing Agency	Previously Applied as a COP Term and Condition
		○ Wind speed (knots), from direction ○ Swell height (meters) ○ Water depth (meters) ○ Visibility (km) ○ 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 ○ Certainty of identification ○ Number of adults ○ Number of juveniles ○ Total number of animals ○ Bearing to animal(s) when first detected (ship heading + clock face) ○ Range from vessel (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 survey activity and distance from source vessel) ○ Direction of travel/first approach (relative to vessel) ○ 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 (HH:MM) ○ Initial heading of animal(s) (degrees) Final heading of animal(s) (degrees) ○ Shutdown zone size during detection (meters) ○ Was the animal inside the shutdown zone? ○ Closest point of approach to pile-driving operation (reticle distance in meters) ○ Time at closest approach (UTC HH:MM) ○ Time animal entered shut-down zone (UTC HH:MM) ○ Time animal left shut-down zone (UTC HH:MM) ○ If observed/detected during ramp up/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) ○ Time equipment was shut down (UTC) ○ Reason shutdown was not implemented			
MUL-33	Vessel communication of threatened and endangered species sightings	Whenever multiple vessels are operating for an individual project, any visual observations of listed species (marine mammals and sea turtles) must be communicated immediately to a PSO and/or vessel captain(s) associated with the other project vessel(s).	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	✓
MUL-34	Detected or impacted protected species reporting	The Lessee must report within 48 hours all observations or collections of injured or dead whales, sea turtles, or sturgeon to BSEE and NMFS. The Lessee must ensure its reports reference the project and include the Take Report Form available on NMFS' webpage at: https://media.fisheries.noaa.gov/202107/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-midatlantic/consultations/section-7-take-reporting-programmatics-greater-atlantic under the "Sturgeon Genetics Sampling" heading.	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	✓

Measure ID[1]	Measure Name	Description	Resource Area Mitigated	Anticipated Enforcing Agency	Previously Applied as a COP Term and Condition
		The Lessee must report any suspected or confirmed vessel strike of a sea turtle or sturgeon by any project vessel in any location, including observation of any injured sea turtle/sturgeon or sea turtle/sturgeon parts to BOEM, BSEE, NMFS, and NMFS New England/Mid-Atlantic Regional Stranding Hotline (866-755-6622) as soon as feasible. The Lessee must include in the report the following information: (a) time, date, and location (latitude/longitude) of the incident; (b) species identification (if known) or description of the animal(s) involved; (c) vessel's speed during and leading up to the incident; (d) vessel's course/heading and what operations were being conducted (if applicable); (e) status of all sound sources in use; (f) 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; (g) environmental conditions (e.g., wind speed and direction, Beaufort scale, cloud cover, visibility) immediately preceding the strike; (h) estimated size and length of animal that was struck; (i) description of the behavior of the animal immediately preceding and following the strike; (j) estimated fate of the animal (e.g., dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and (k) to the extent practicable, photographs or video footage of the animal(s). 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, NMFS New England/Mid-Atlantic Regional Stranding Hotline (866-755-6622), as soon as feasible, but no later than 24 hours from the sighting. The Lessee must include in the report the following information: (a) time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable); (b) species identification (if known) or description of the animal(s) involved; (c) condition of the animal(s) (including carcass condition if the animal is dead); (d) observed behaviors of the animal(s), if alive; (e) if available, photographs or video footage of the animal(s); and (f) 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.			
MUL-35	Monthly/annual reporting requirements	**Monthly**: The Lessee must compile and submit monthly reports that include a summary of all project activities carried out in the previous month, including trawl surveys, vessel transits (number, type of vessel, and route inclusive of port of origin and destination), and piles installed, and all observations of ESA-listed whales, sea turtles, and sturgeon. These reports related to ESA and non-ESA listed marine species reporting conditions must be submitted to BOEM, BSEE, and NMFS no later than the 15th of the month for the previous month. **Annual**: 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, and NMFS. 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, BOEM, and BSEE, the frequency of reports can be changed.	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	✓
MUL-36	Visual vessel strike monitoring	Lessees must require visual vessel strike monitoring of protected species for all vessels while operating within US EEZ waters. This includes vessels traveling from Europe or other regions, in which visual monitoring is conducted for vessel strike avoidance when the vessel is within the US EEZ boundary. This can include the use of trained observers onboard the vessel, or alternative monitoring, such as IR camera systems, with the possibility of remote monitoring for systems with established and documented efficacy.	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	
MUL-37	Aircraft Detection Lighting System (ADLS)	Lessees must use an FAA-approved vendor for the 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. Lessees must confirm the use of an FAA-approved vendor for ADLS on WTGs and OSSs in the FIR.	Birds; Cultural Resources; Marine Mammals; Recreation and Tourism; Sea Turtles; Scenic and Visual Resources	BOEM, BSEE, and FAA	✓
MUL-38	Noise mitigation plan	Lessees must create a noise mitigation plan to reduce project noise that could potentially constitute a take, as defined in the ESA or the MMPA, of an endangered or threatened species or marine mammal. The intent of the noise mitigation plan is to ensure Lessees thoroughly assess and minimize potential impactful noise to the maximum extent practicable, and that any government-established noise reduction targets (e.g., MUL-22) are met. The noise mitigation plan may be submitted through the Lessee's initial COP submission or subsequent updated versions but must be finalized prior to initiating construction activities. BOEM and BSEE will review the plan for sufficiency and acceptability. Any outstanding comments must be addressed by the Lessee before the plan is considered final. At a minimum, the noise mitigation plan must include: (1) baseline sound characterization (predicted or measured) of their project area; (2) the types, duration, and levels of unmitigated noise the project will produce; (3) identification of any applicable government-established noise reduction targets; and (4) the operational measures, noise abatement technologies, and contingency plans (in the case of foreseeable issues) or similar that will be used to meet any existing established noise reduction targets or reduce the overall	Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM, BSEE, and NMFS	

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		impact of any noise introduced into the marine environment. On a case-by-case basis, BOEM may consider accepting a plan that does not meet established noise reduction targets or, where such targets do not exist, does not demonstrate reduction of impactful noise to the maximum extent practicable if the plan includes sufficient justification for why this is not possible. In these cases, a requirement for compensatory mitigation may be considered.			
MUL-39	Electrical shielding on underwater cables	Lessees should use standard underwater cables that have electrical shielding to control the intensity of electromagnetic fields (EMF). EMF will be further refined as part of the design or cable burial risk assessment.	Benthic; Finfish, Invertebrates, and EFH; Marine Mammals; Sea Turtles	BOEM and BSEE	
NAV-1	Boulder relocation reporting	The Lessee must provide USCG, NOAA, navigational software companies, and the local harbormaster with a comprehensive list and shapefile of positions and areas to which boulders >6.6 feet (>2 meters) will be relocated (latitude, longitude) at least 60 days prior to boulder relocation activities.	Commercial and For-Hire Fishing, Navigation and Vessel Traffic	BOEM, BSEE, USCG, and NOAA	
NAV-2	Marine Planning Guidelines	In developing their initial COP or as part of subsequent updated versions, Lessees will adopt the Marine Planning Guidelines (NVIC 02-23, Enclosure (3) or applicable current version: https://www.dco.uscg.mil/Portals/9/DCO%20Documents/5p/5ps/NVIC/2020/2023/OREI%20NVIC%202023_FINAL_05OCT2023.pdf?ver=2FtgA6VSQw3TzFDIObhmgQ%3d%3d, where applicable, as established by USCG to ensure navigational safety. Additionally, Lessees will work closely with USCG and USCG-recognized maritime experts to improve procedures for evaluating and regulating safety at sea, including through adjustments to the Port Access Route Study process.	Navigation and Vessel Traffic	BOEM, BSEE, and USCG	
NAV-3	Cable placement for navigation and safety	Lessees must seek to avoid unfavorable cable placement, including avoidance of Federal Aids to Navigation (ATONs), Private Aids to Navigation (PATONs), anchorage areas (including Ambrose Anchorage), Traffic Separation Schemes, and Fairways. If these cannot be avoided, the Lessees will coordinate with USCG and make best efforts to route the cable as directly across these routing schemes as reasonably practicable. Cables that need to cross the proposed New York to New Jersey Connector Fairway tug-and-tow lane should cross as perpendicularly to the lane as feasible.	Navigation and Vessel Traffic	BOEM, BSEE, and USCG	

OU-1	Mitigation for oceanographic high frequency radars	BOEM would require that the Lessee coordinate with the radar operators and the Surface Currents Program of NOAA Integrated Ocean Observing System (IOOS) Office to assess if the project causes radar interference to the degree that radar performance is no longer within the specified radar system's operation parameters or fails to meet mission objectives. If either is the case, the Lessee must notify BOEM and engage radar operators and NOAA IOOS on mitigation efforts. The following options to mitigate operational impacts on oceanographic high-frequency radars have been identified:
		• Data sharing from turbine operators to include the following:
		  ○ Sharing real-time telemetry of surface currents and other oceanographic data measured at locations in the project with radar operators into the public domain.
		  ○ Sharing time-series of blade rotation rates, nacelle bearing angles, and other information about the operational state of each of the project's turbines with radar operators to aid interference mitigation.
		• Wind farm curtailment/curtailment agreement between NOAA IOOS, Lessee and BOEM
		Additional modifications identified for oceanographic high-frequency radar systems to mitigate impacts:
		• Signal processing enhancements.
		• Antenna modifications
			Other Uses	BOEM and BSEE	

OU-2	Mitigation for NEXRAD weather radar systems	Operational mitigations to NEXRAD weather radar systems include the following: • Wind farm curtailment/curtailment agreement Research is being conducted to determine whether impacts on weather radar can be mitigated by using phased array radars to achieve a null in the antenna radiation pattern in the direction of the wind turbine.	Other Uses	BOEM and BSEE	
OU-3	Mitigation for ARSR-4 and ASR-8/9 radars	Operational mitigations identified for impacts on airport surveillance radar (ASR)-8/9: • Passive aircraft tracking using ADS-B or signal/transponder • Increased aircraft altitude near radar • Sensitivity time control (range-dependent attenuation) • Range azimuth gating (ability to isolate/ignore signals from specific range-angle gates) • Track initiation inhibiting, velocity editing, plot amplitude thresholding (limiting the amplitude of certain signals) Modification mitigations for ARSR-4 and for ASR-8/9 systems:	Other Uses	BOEM and BSEE	

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		• Utilizing the dual beams of the radar simultaneously • In-fill radars			
OU-4	Decommissioning in marine minerals resource areas	Infrastructure emplaced in marine minerals resource areas must be removed from the marine mineral resource area during decommissioning. In addition, any request to decommission in place in such areas through a departure request must demonstrate no significant impacts to marine minerals resources.	Other Uses	BOEM and BSEE	
OU-5	HF radar interference mitigation agreement	At least 60 calendar days prior to completion of construction or initiation of commercial operations (whichever is earlier), the Lessee must enter into a mitigation agreement with the Surface Currents Program of NOAA's Integrated Ocean Observing System (IOOS) Office to determine if the Lessee's project causes radar interference to the degree that radar performance is no longer within the specific radar systems' operational parameters or fails to meet NOAA IOOS's mission objectives and to establish a mitigation agreement. Within 15 calendar days of entering into the mitigation agreement, the Lessee must provide BOEM with a copy of the executed mitigation agreement. Within 45 calendar days of completing any requirements in the mitigation agreement, the Lessee must provide BOEM and BSEE with evidence of compliance with those requirements. Where possible, the Lessee will adhere to the recommendations for mitigation to marine radar interference from the National Academy of Science: *Wind Turbine Generator Impacts to Marine Vessel Radar* (2022).	Other Uses	BOEM, BSEE, and NMFS	
OU-6	Marine minerals resource area avoidance	Lessees must coordinate with the BOEM Marine Minerals Program (MMP), USACE, and state resource agencies (e.g., NJDEP, NYSDEC, NYSDOS) on cable corridor placement with any preliminary design or design changes and prior to final cable placement. Lessees must ensure that bottom-disturbing activities avoid, to the maximum extent practicable, nearshore borrow areas and OCS sediment resources. Any activity that lasts more than 180 days and is located within 500 lateral meters of any marine minerals resource areas or limits the long-term use of the resource is considered bottom disturbing. Lessees must use their geophysical and geological information collected in/along proposed corridors to demonstrate and verify the existence of sand resource or dearth of sand resource and estimate (via range) the possible implication of cable crossing on volume access. The Lessee is responsible for responding to any request from these agencies in writing and to show good faith efforts to avoid sand resources to the maximum extent practicable or explain why another alternative is not technically or economically feasible.	Other Uses	BOEM and BSEE	
OU-7	Federal Survey Mitigation Program	There are NMFS scientific surveys that overlap with wind energy development in the northeast region. 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 (Hare et al. 2022)[7] 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 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 procedures described below, within 180 days of COP approval. BOEM will review the survey mitigation plan in consultation with NMFS Northeast Fisheries Science Center (NEFSC), and the Lessee must resolve comments to BOEM's satisfaction and must conduct activities in accordance with the plan. • 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 to develop the survey mitigation agreement described above. Mitigation activities specified under the agreement must be designed to mitigate the project impacts on the NMFS NEFSC surveys that overlap with the project. 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. • The survey mitigation agreement must identify activities that will result in the generation of data equivalent to data generated by NMFS' affected surveys 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.	Other Uses	BOEM and NMFS	✓

[7] 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.

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REC-1	Nearshore construction timing restriction	Lessees should prioritize scheduling of nearshore construction activities for outside the summer tourist season, which is generally between Memorial Day and Labor Day.	Land Use and Coastal Infrastructure, Recreation and Tourism	Voluntary	
ST-1	Monitoring zone for sea turtles for pile-driving	Lessees must monitor the full extent of the area where noise would exceed the 175 dB re 1 µPa received level behavioral threshold for sea turtles for the full duration of all pile-driving activities and for 30 minutes following the cessation of pile-driving activities. Lessees must record all observations to ensure that all take that occurs is documented (see MUL-32 and MUL-34).	Sea Turtles	BOEM, BSEE, and NMFS	
ST-2	Monitoring for sea turtles and reporting	Between June 1 and November 30, the Lessees 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 in (e) below can be implemented. a. 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. b. The trained lookout must maintain a vigilant watch and monitor a Vessel Strike Avoidance Zone (1,640 feet [500 meters]) at all times to maintain minimum separation distances from ESA-listed species. Alternative monitoring technology (e.g., night vision, thermal cameras) will be available to ensure effective watch at night and in any other low visibility conditions. If the trained lookout is a vessel crew member, this 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. c. If a sea turtle is sighted within 328 feet (100 meters) or less of the operating vessel's forward path, the vessel operator must slow down to 4 knots (7.4 kilometers per hour) (unless unsafe to do so) and then proceed away from the turtle at a speed of 4 knots (7.4 kilometers per hour) or less until there is a separation distance of at least 328 feet (100 meters), at which time the vessel may resume normal operations. If a sea turtle is sighted within 164 feet (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 (7.4 kilometers per hour). The vessel may resume normal operations once it has passed the turtle. d. Vessel captains/operators must avoid transiting through areas of visible jellyfish aggregations or floating sargassum lines or mats. In the event that operational safety prevents avoidance of such areas, vessels will slow to 4 knots (7.4 kilometers per hour) while transiting through such areas. e. 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 expectation and process for reporting of sea turtles (including live, entangled, and dead individuals) will be clearly communicated and posted in highly visible locations aboard all project vessels, so that there is an expectation 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. f. The only exception is when the safety of the vessel or crew necessitates deviation from these requirements on an emergency basis. If any such incidents occur, they must be reported to NMFS and BSEE within 24 hours. 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 maintain watch for whales and sea turtles.	Sea Turtles	BOEM, BSEE, and NMFS	✓
ST-3	Sea turtle disentanglement	Vessels deploying fixed gear (e.g., pots/traps) must have adequate disentanglement equipment (i.e., knife and boathook) onboard. Any disentanglement will occur consistent with the Northeast Atlantic Coast STDN Disentanglement Guidelines (https://www.reginfo.gov/public/do/DownloadDocument?objectID=102486501) and the procedures described in Careful Release Protocols for Sea Turtle Release with Minimal Injury (NOAA Technical Memorandum 580; https://repository.library.noaa.gov/view/noaa/3773).	Sea Turtles	BOEM, BSEE, and NMFS	✓
STF-1	Monitoring on strategically placed WTGs	Lessees are encouraged to incorporate technologies for detecting tagged (e.g., Innovasea) sea turtles and highly migratory fish in their project to monitor the effect of increases in habitat use and residency around WTG foundations. The Lessees are encouraged to share monitoring results and propose new or additional mitigation measures and/or monitoring methods if appropriate.	Finfish, Invertebrates, and EFH; Sea Turtles	Voluntary	
STF-2	Sea turtle/Atlantic sturgeon identification and data collection	Any sea turtles or Atlantic sturgeon caught and/or retrieved in any fisheries survey gear will first be identified to species or species group. Each ESA-listed species caught and/or retrieved must then be properly documented using appropriate equipment and data collection forms. Biological data, samples, and tagging must occur as outlined below. Live, uninjured animals must be returned to the water as quickly as possible after completing the required handling and documentation.	Finfish, Invertebrates, and EFH; Sea Turtles	BOEM, BSEE, and NMFS	✓

Measure ID[1]	Measure Name	Description	Resource Area Mitigated	Anticipated Enforcing Agency	Previously Applied as a COP Term and Condition
		a. The Sturgeon and Sea Turtle Take Standard Operating Procedures will be followed (https://media.fisheries.noaa.gov/dammigration/sturgeon_&_sea_turtle_take_sops_external.pdf). b. Survey vessels must have 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 will be used to scan any captured sea turtles and sturgeon for tags. Any recorded tags must be recorded on the take reporting form (see below). c. Genetic samples must be taken from all captured Atlantic sturgeon (alive or dead) to allow for identification of the distinct population segment (DPS) of origin of captured individuals and tracking of the amount of incidental take. This will be done in accordance with the Procedures for Obtaining Sturgeon Fin Clips (https://media.fisheries.noaa.gov/dammigration/sturgeon_genetics_ sampling_revised_june_2019.pdf). i. Fin clips will be sent to an NMFS-approved laboratory capable of performing genetic analysis and assignment to DPS of origin. To the extent authorized by law, BOEM is responsible for the cost of the genetic analysis. Arrangements would be made for shipping and analysis in advance of submission of any samples; these arrangements will be confirmed in writing to NMFS. Results of genetic analysis, including assigned DPS of origin, will be submitted to NMFS within 6 months of the sample collection. ii. Subsamples of all fin clips and accompanying metadata forms will be held and submitted to a tissue repository (e.g., the Atlantic Coast Sturgeon Tissue Research Repository) on a quarterly basis. The Sturgeon Genetic Sample Submission Form is available for download at: https://www.fisheries.noaa.gov/new-england-midatlantic/consultations/section-7-take-reporting-programmaticsgreater-atlantic. All captured sea turtles and Atlantic sturgeon must be documented with required measurements and photographs. The animal's condition and any marks or injuries will be described. This information will be entered as part of the record for each incidental take. An NMFS Take Report Form must be filled out for each individual sturgeon and sea turtle (download at: https://media.fisheries.noaa.gov/2021-1507/Take%20Report%20Form%2007162021.pdf) and submitted to NMFS.			
STF-3	Sea turtle/Atlantic sturgeon handling and resuscitation guidelines	Any sea turtles or Atlantic sturgeon caught and retrieved in gear used in fisheries surveys must be handled and resuscitated (if unresponsive) according to established protocols and whenever at-sea conditions are safe for those handling and resuscitating the animal(s) to do so. Specifically: a. Priority will be given to the handling and resuscitation of any sea turtles or sturgeon that are captured in the gear being used, if conditions at sea are safe to do so. Handling times for these species will be minimized (i.e., kept to 15 minutes or less) to limit the amount of stress placed on the animals. b. All survey vessels will have copies of the sea turtle handling and resuscitation requirements found at 50 CFR 223.206(d)(1) prior to the commencement of any on-water activity (download at: https://media.fisheries.noaa.gov/dammigration/sea_turtle_handling_and_resuscitation_measures.pdf). These handling and resuscitation procedures must be carried out any time a sea turtle is incidentally captured and brought onboard the vessel during the surveys. c. If any sea turtles that appear injured, sick, or distressed, are caught and retrieved in fisheries survey gear, survey staff must immediately contact the Greater Atlantic Region Marine Animal Hotline at 866-755-6622 for further instructions and guidance on handling the animal, and potential coordination of transfer to a rehabilitation facility. If unable to contact the hotline (e.g., due to distance from shore or lack of ability to communicate via phone), USCG must be contacted 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 following handling instructions provided by the Hotline, prior to transfer to a rehabilitation facility. d. Attempts will be made 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 (https://media.fisheries.noaa.gov/dammigration-miss/Resuscitation-Cards-120513.pdf). e. Provided that appropriate cold storage facilities are available on the survey vessel, following the report of a dead sea turtle or sturgeon to NMFS, and if NMFS requests, any dead sea turtle or Atlantic sturgeon will be retained on board the survey vessel for transfer to an appropriately permitted partner or facility on shore as soon as it is safe to do so. Any live sea turtles or Atlantic sturgeon caught and retrieved in gear used in any fisheries survey must ultimately be released according to established protocols and whenever at-sea conditions are safe for those releasing the animal(s) to do so.	Finfish, Invertebrates, and EFH; Sea Turtles	BOEM, BSEE, and NMFS	✓
STF-4	Take notification for sea turtles/Atlantic sturgeon	NMFS must be notified as soon as possible of all observed takes of sea turtles and Atlantic sturgeon occurring because of any fisheries survey. Specifically:	Finfish, Invertebrates, and EFH; Sea Turtles	BOEM, BSEE, and NMFS	✓

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		• NMFS (nmfs.gar.incidental-take@noaa.gov) and BSEE (via TIMSWeb and protectedspecies@bsee.gov) will be notified within 24 hours of any interaction with a sea turtle or Atlantic sturgeon. The report must include at a minimum: (1) survey name and applicable information (e.g., vessel name, station number); (2) 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; and (6) identification of the animal to the species level. Additionally, the e-mail will transmit a copy of the NMFS Take Report Form (download at: https://media.fisheries.noaa.gov/2021-07/Take%20Report%20Form%2007162021.pdf) and a link to or acknowledgement that a clear photograph or video of the animal was taken (multiple photographs are suggested, including at least one photograph of the head scutes). If reporting within 24 hours is not possible due to distance from shore or lack of ability to communicate via phone, fax, or email, reports will be submitted as soon as possible; late reports will be submitted with an explanation for the delay. At the end of each survey season, a report must be sent to NMFS that compiles all information on any observations and interactions with ESA-listed species. This report will also 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 will be comprehensive of all activities, regardless of whether ESA-listed species were observed.			
STF-5	Trailing suction hopper dredge mitigation	If a trailing suction hopper dredge is used offshore, operators must disengage dredge pumps when the dragheads are not actively dredging and therefore working to keep the draghead firmly on the bottom in order to prevent impingement or entrainment of ESA-listed fish and sea turtle species. Pumps must be disengaged when lowering dragheads to the bottom to start dredging, turning, or lifting dragheads off the bottom at the completion of dredging.	Finfish, Invertebrates, and EFH; Sea Turtles	BOEM and BSEE	
VIS-1	Onshore transmission tower visual contrast mitigation	Lessees should select a transmission tower type that has the least amount of visual contrast within the surrounding setting and the extended landscape within view of which the transmission line is routed through in order to avoid undue and unnecessary visual impact. Monopoles typically have less visual contrast within built environments, whereas lattice towers typically have less visual contrast in more natural settings. Lessees must color-treat the transmission tower darker grays (chemically treated galvanized finishes) to reduce visual contrast or powder-coat the tower with Bureau of Land Management Environmental Color Covert Green or Shadow Gray, or a BOEM-approved equal submitted by the Lessee for settings where Covert Green or Shadow Gray does not minimize the visual contrast. Lessees must prepare photo simulations of proposed onshore facilities with and without mitigation measures described in VIS-1. Bureau of Land Management color samples may be acquired by email to blm_oc_pmds@blm.gov.	Scenic and Visual Resources	As enforced under state permitting	
VIS-2	Onshore substation visual contrast mitigation	Lessees should color treat all substation facilities the same color, and color-treated to minimize visual contrast with the surrounding setting, and the extended landscape within view. The default color choice for substations must be Bureau of Land Management Environmental Color Covert Green or Shadow Gray, or a BOEM-approved equal submitted by the Lessee for settings where Covert Green or Shadow Gray does not minimize the visual contrast in order to avoid undue and unnecessary visual impact. Lessees must prepare photo simulations of proposed onshore facilities with and without mitigation measures described in VIS-2. Bureau of Land Management color samples may be acquired by email to blm_oc_pmds@blm.gov.	Scenic and Visual Resources	As enforced under state permitting	
VIS-3	Onshore overhead transmission conductors visual contrast mitigation	Lessees should use non-specular conductors for overhead transmission powerlines to avoid glare commonly associated with untreated conductors to avoid undue and unnecessary visual impact. Lessees must prepare photo simulations of proposed onshore facilities with and without mitigation measures described in VIS-3.	Scenic and Visual Resources	As enforced under state permitting	
VIS-4	Onshore overhead transmission line insulator visual contrast mitigation	Lessees should use polymer insulators to minimize glare commonly associated with glass insulators. Lessees should use polymer insulators that are a color that minimizes visual contrast with the surrounding setting and the extended landscape that is within view to avoid undue and unnecessary visual impact. The default color choice for polymer insulators substations should be Bureau of Land Management Environmental Color Covert Green or Shadow Gray, or Sudan Brown, or a BOEM-approved equal submitted by the Lessee for settings where Covert Green or Shadow Gray or Sudan Brown do not minimize the visual contrast. Bureau of Land Management color samples may be acquired by email to blm_oc_pmds@blm.gov. Lessees must prepare photo simulations of proposed onshore facilities with and without mitigation measures described in VIS-4.	Scenic and Visual Resources	As enforced under state permitting	
VIS-5	Onshore facility security fencing visual contrast mitigation	Lessees should ensure galvanized and other types of security fencing are treated to eliminate glare and color-treated to minimize visual contrast with the surrounding setting and the extended landscape that is within view to avoid undue and unnecessary visual impact. Methods include vinyl-coating, powder-coating, and oxidizing treatments. Colors must be dark brown, dark grays, or dark brown (oxidizing treatments only).	Scenic and Visual Resources	As enforced under state permitting	

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		Lessees must prepare photo simulations of proposed onshore facilities with and without mitigation measures described in VIS-5.			
VIS-6	Onshore facility lighting	In order to avoid undue and unnecessary visual impact, Lessees should ensure artificial light at night needed for nighttime operations and security at onshore facilities such as operational and maintenance facilities, substations, and others follows the night lighting principles to avoid light pollution and the artificial lighting best management practices outlined in the Bureau of Land Management Technical Note 457 available at https://www.blm.gov/sites/default/files/docs/2023-05/IB2023-038_att1.pdf. Lessees must prepare photo simulations of proposed onshore facilities with and without mitigation measures described in VIS-6.	Scenic and Visual Resources	As enforced under state permitting	
VIS-7	Monitoring impacts on scenic and visual resources	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 operations/maintenance (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 wind turbine visibility over a duration of time from selected onshore key observation points, as determined by BOEM and the Lessee. In addition, the Lessee shall 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.	Scenic and Visual Resources	As enforced under state permitting	
WQ-1	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.	Water Quality	BOEM and BSEE	✓
WQ-2	Oil Spill Response Plan	Pursuant to 30 CFR 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 CFR 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: 1. Bookmarks. Appropriately labeled bookmarks that are linked to their corresponding sections of the OSRP. 2. Table of Contents. 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. 4. Facility and Oil Information. "Facility," as defined in 30 CFR 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: a. List the latitude and longitude, water depth, and distance to the nearest shoreline for each facility that may handle and/or store oil. b. List the oil(s) by product/brand name and corresponding volume(s) on each type of facility covered under the Lessee's OSRP. c. 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. 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. 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. a. "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.	Water Quality	BOEM and BSEE	✓

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		b. "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 Incident Commander (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 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 in the Lessee's OSRP. 7. Notification Procedures. The OSRP must describe the procedures for spill notification. Notification procedures must include the 24-hour contact information for: a. The QI and an alternate, including phone numbers and email addresses. b. IMT members, including phone numbers and email addresses. c. Federal, state, and local regulatory agencies that must be notified when a spill occurs, including, but not limited to, the National Response Center. d. The Oil Spill Removal Organizations (OSRO) and Spill Response Operating Teams (SROT) that are available to respond. e. Other response organizations and subject matter experts that the Lessee will rely on for the Lessee's response. 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: a. 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). b. General procedures for ensuring that the source of a discharge is controlled as soon as possible after a spill occurs. c. Procedures to remove oil and oiled debris from shallow waters and along shorelines. d. 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. 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). 10. OSRO(s) and SROT(s). The OSRO is an entity contracted by the Lessee to provide spill response equipment and/or manpower in the event of an oil spill. The 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. 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. a. The Lessee must ensure that the oil spill response equipment is maintained in proper operating condition. b. The Lessee must ensure that all oil spill response equipment maintenance, modification, and repair records are kept for a minimum of 3 years. c. The Lessee must provide oil spill response equipment maintenance, modification, and repair records to BSEE OSPD upon request. d. 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. e. 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. 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			

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		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 provide the training records to BSEE upon request. 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. a. If multiple candidate WCD facilities contain the same cumulative volume of oil(s), the WCD facility is the one closest to shore. b. The WCD facility must be identified on the facility map consistent with the "Facility and Oil Information" section. c. 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. 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: a. Be based on the WCD volume. b. 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. c. 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. 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. a. 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. b. The Lessee must conduct an annual oil spill response equipment deployment exercise. c. The Lessee must notify BSEE OSPD at least 30 days in advance of any exercise it intends to conduct for compliance with this condition. d. 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. e. BSEE may evaluate the results of the exercises and advise the Lessee of any needed changes in response equipment, procedures, tactics, or strategies. f. BSEE may periodically initiate unannounced exercises to test the Lessee's spill preparedness and response capabilities. g. The Lessee must maintain and retain exercise records for at least 3 years and must provide the exercise records to BSEE upon request. 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. 17. OSRP Maintenance. The Lessee must submit a revised OSRP to BSEE OSPD within 15 days if any of the following conditions occur: a. The Lessee experiences a change that would significantly reduce their oil spill response capability. b. The calculated WCD volume has significantly increased.			

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		c. The Lessee removes a contracted IMT, OSRO, or SROT from the Lessee's plan. d. There has been a significant change to the applicable area contingency plan(s).			

[1] AMMM measure identification numbers start with a prefix corresponding to the resource or resources for which they were designed to mitigate and are defined as follows: AQ = air quality; BB = Birds and Bats; BEN = Benthic Resources; BIR = Birds; COMFIS = Commercial and For-Hire Recreational Fishing; CUL = Cultural Resources ; EJ = Environmental Justice; MM = Marine Mammal; MMST = Marine Mammals and Sea Turtles; MUL = Multiple; NAV = Navigation; OU = Other Uses; REC = Recreation and Tourism; ST = Sea Turtle; STF = Sea Turtle and ESA-listed Fish species; VIS = Scenic and Visual Resources; WQ = Water Quality

µPa = micro pascal; ACHP = Advisory Council on Historic Preservation; ADCP = acoustic Doppler current profiling; ADLS = aircraft detection lighting system; ADS-B = automatic dependent surveillance–broadcast; AIS = automatic identification system; ARSR-4 = air route surveillance radar; ASLF = ancient submerged landform features; ASR = airport surveillance radar; ATONs = federal aids to navigation; AUV = autonomous underwater vehicle; BA = biological assessment; BBPCMP = Bird and Bat Post-Construction Monitoring Plan; BMP = best management practices; BOEM = Bureau of Ocean Energy Management; BSEE = Bureau of Safety and Environmental Enforcement; CFR = code of federal regulation; COP = Construction and Operations Plan; CSV = comma-separated values; dB = decibel; DMA = dynamic management area; DOE = Department of Energy; DOI = Department of the Interior; DPS = distinct population segment; EEZ = exclusive economic zone; EJ = environmental justice; ESA = Endangered Species Act; FAA = Federal Aviation Administration; FIR = fabrication and installation report; FSC = Finance Section Chief; GHG = greenhouse gas; GPS = global positioning system; HDD = horizontal directional drilling; HOV = human-occupied vehicles; HPTPS = historic property treatment plans; HRG = high resolution geophysical; IC = Incident Commander; ICS = Incident Command System; IMO = international maritime organization; IMPLAN = impact analysis for planning; IMT = Incident Management Team; IOOS = integrated ocean observing system; IR = inadvertent returns; ISO = independent system operator; JPEG = joint photographic experts group; kHz = kilohertz; km = kilometers; LBL = long baseline; LFC = low frequency cetaceans; LSC = Logistics Section Chief; MEC = munitions and explosives of concern; MMP = marine minerals program; MMPA = Marine Mammal Protection Act; MWh = megawatt hours; NARW = North Atlantic right whale; NAVTEX = navigational telex; NEFSC = Northeast Fisheries Science Center; NEPA = National Environmental Policy Act; NEXRAD = Next Generation Weather Radar; NGOs = non-governmental organization; NJDEP = New Jersey Department of Environmental Protection; NMFS = National Marine Fisheries Service; NOAA = National Oceanic and Atmospheric Administration; NO_X = nitrogen oxides; NRHP = National Register of Historic Places; nT = nanotesla; NVDs = night vision devices; NVIC = navigation and vessel inspection circular; NYS = New York State; NYSDEC = New York State Department of Environmental Conservation; NYSDOS = New York State Department of State; NYSERDA = New York State Energy Research and Development Authority; OCS = outer continental shelf; OSC = Operations Section Chief; OSPD = Oil Spill Preparedness Division; OSRO = Oil Spill Removal Organizations; OSRP = Oil Spill Response Plan; OSS = offshore substation; PAM = passive acoustic monitoring; PATON = private aids to navigation; PDC = project design criteria; PDM = pile-driving monitoring plan; PEIS = programmatic environmental impact statement; PIT = passive integrated transponder; PMT = pressure monitoring transducer; POI = point of interconnection; PSC = Planning Section Chief; PSO = protected species observer; PTS = permanent threshold shift; QI = Qualified Individual; ROSA = Responsible Offshore Science Alliance; ROV = remotely operated vehicle; RSLL = received sound level limit; RTO = regional transmission organization; RWSC = Regional Wildlife Science Collaborative; SAA = state agreement approach; SAR = search and rescue; SBP = sub-bottom profiler; SCPP = scour and cable protection plan; SCRAM = stochastic collision risk assessment for movement; SF_6 = sulfur hexafluoride; SFV = sound field verification; SHPOs = state historic preservation officer; SMA = seasonal management area; SMS = safety management system; SO_2 = sulfur dioxide; SROT = Spill Response Operating Teams; STDN = sea turtle disentanglement network; TIFF = tag image file format; TIMS = technical information management systems; TOYRs = time of year restrictions; USBL = ultra-short baseline; U.S.C. = United States Code; USCG = United States Coast Guard; USEPA = United States Environmental Protection Agency; USFWS = United States Fish and Wildlife Service; UTC = universal time coordinated; UXO = unexploded ordnance; WCD = worst-case discharge; WTGs = wind turbine generators