APPENDIX F

Environmental Protection Measures, Mitigation, and Monitoring

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Introduction

The Revolution Wind Farm (RWF) and the Revolution Wind Export Cable (RWEC) Project environmental impact statement (EIS) assesses the potential environmental, social, economic, historical, and cultural impacts that could result from the construction, operations and maintenance (O&M), and decommissioning of a wind energy project (the Project) located in the Bureau of Ocean Energy Management's (BOEM's) Renewable Energy Lease Area OCS-A 0486, approximately 15.0 miles east of Block Island, Rhode Island; approximately 12.5 miles south of the Rhode Island mainland coast; and between approximately 12.0 and 13.5 miles southeast of various points along the Massachusetts coastline in the Atlantic Ocean. The Project comprises the siting and development of the RWF and the RWEC. Revolution Wind, LLC (Revolution Wind) is proposing the Project, which is designed to contribute to Connecticut's renewable energy mandate of 2,000 megawatts (MW) of offshore wind energy by 2030 and Rhode Island's 100% renewable energy goal by 2030.

As part of the Project, Revolution Wind has committed to self-implement measures to avoid, reduce, mitigate, and/or monitor impacts on the resources discussed in Chapter 3 of the EIS. Those environmental protection measures (EPMs) are summarized in Table F-1 of this appendix. BOEM considers as part of the Proposed Action only those measures that Revolution Wind has committed to in the construction and operations plan (COP) (vhb 2022). BOEM may select alternatives and/or require additional mitigation or monitoring measures to further protect and monitor these resources. Additional mitigation and monitoring measures may result from reviews under several environmental statutes (Clean Air Act, Endangered Species Act [ESA], Magnuson-Stevens Fisheries Conservation and Management Act, Marine Mammal Protection Act [MMPA], and National Historic Preservation Act), as discussed in Appendix A of the EIS. Additional mitigation measures identified by BOEM, as well as those that may result from reviews under these statutes, are shown in Table F-2. Please note that not all of these mitigation measures are within BOEM's statutory and regulatory authority but could be adopted and imposed by other governmental entities. Table F-2 provides descriptions of these mitigation or monitoring measures as well as those that BOEM has identified for analysis in the EIS.

If BOEM decides to approve the COP, the ROD would state which of the mitigation and monitoring measures identified by BOEM in Table F-2 have been adopted, and if not, why. Thus, the ROD would inform terms and conditions of COP approval and would compel compliance with or execution of identified mitigation and monitoring measures (40 CFR 1505.3). Revolution Wind would be required to certify compliance with certain terms and conditions, as required under 30 CFR 585.633(b). Furthermore, BOEM would periodically review the activities conducted under the approved COP. The frequency and extent of the review would be 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 COP. If the review indicated that the COP should be revised or amended to meet the requirement of BOEM's renewable energy regulations, Revolution Wind would be required to submit the needed revisions (30 CFR 585.634(b)).

Monitoring measures may be required to evaluate the effectiveness of a mitigation measure or to identify if resources are responding as predicted to impacts from the Proposed Action. Monitoring programs would be developed in coordination between BOEM and agencies with jurisdiction over the resource to be monitored. The information generated by monitoring may be used to 1) modify how a mitigation measure identified in the COP or ROD is being implemented, 2) revise or develop new mitigation or monitoring measures for which compliance would be required under the RWF COP in accordance with

30 CFR 585.634(b), 3) develop measures for future projects, and/or 4) contribute to regional efforts for better understanding the impacts and benefits resulting from offshore wind energy projects in the Atlantic (e.g., a potential cumulative impact assessment tool).

In this appendix, distances in miles are in statute miles (miles used in the traditional sense) or nautical miles (miles used specifically for marine navigation). Statute miles are more commonly used and are referred to simply as *miles*, whereas nautical miles are referred to by name or by their abbreviation *nm*.

Table F-1. Environmental Protection Measures Committed to by Revolution Wind, LLC

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
Provided in COP Table 4.7-2					
AQ-1	Construction and installation, O&M, and decommissioning	Mitigation of air emissions	Vessels providing construction or maintenance services for the RWF will use low-sulfur fuel, where possible.	Air quality	Revolution Wind
AQ-2	Construction and installation, O&M, and decommissioning	Mitigation of air emissions	Vessel engines will meet the appropriate Environmental Protection Agency (EPA) air emission standards for nitrogen oxide (NO_X) emissions when operating within Emission Controls Areas.	Air quality	Revolution Wind
AQ-3	Construction and installation, O&M, and decommissioning	Mitigation of air emissions	Onshore Facilities equipment and fuel suppliers will provide equipment and fuels that comply with the applicable EPA or equivalent emission standards.	Air quality	Revolution Wind
AQ-4	Construction and installation, O&M, and decommissioning	Mitigation of air emissions	Marine engines with a model year of 2007 or later and non-road engines complying with the Tier 3 standards (in 40 CFR 89 or 1039) or better will be used to satisfy best available control technology (BACT) or lowest achievable emission rate (LAER).	Air quality	Revolution Wind
WQ-1	Construction and installation	Cable burial risk assessment	To the extent feasible, installation of the Inter-array cables (IACs), OSS-Link Cable, and RWEC will occur using equipment such as mechanical cutter, mechanical plow, or jet plow. The feasibility of cable burial equipment will be determined based on an assessment of seabed conditions and the Cable Burial Risk Assessment.	Water quality	Revolution Wind
WQ-2	Construction and installation, O&M, and decommissioning	Spill prevention and control measures	Revolution Wind will require all construction and operations vessels to comply with regulatory requirements related to the prevention and control of spills and discharges.	Water quality	Revolution Wind
WQ-3	Construction and installation, O&M, and decommissioning	Oil spill response plan (OSRP)	Accidental spill or release of oils or other hazardous materials offshore will be managed through the OSRP (COP Appendix D).	Water quality	Revolution Wind
WQ-4	Construction and installation, O&M, and decommissioning	Marine debris awareness training	All vessels will comply with United States Coast Guard (USCG) and EPA regulations that require operators to develop waste management plans, post informational placards, manifest trash sent to shore, and use special precautions such as covering outside trash bins to prevent accidental loss of solid materials. Vessels will also comply with BOEM lease stipulations that require adherence to Notice to Lessee (NTL) 2015-G03, which instructs operators to exercise caution in the handling and disposal of small items and packaging materials, requires the posting of placards at prominent locations on offshore vessels and structures, and mandates a yearly marine trash and debris awareness training and certification process.	Water quality	Revolution Wind
WQ-5	Construction and installation	HDD contingency plan	At the landfall location, drilling fluids will be managed within a contained system to be collected for reuse as necessary. An HDD Contingency Plan will be prepared and implemented to minimize the potential risks associated with release of drilling fluids.	Water quality	Revolution Wind
WQ-6	Construction and installation, O&M, and decommissioning	Soil erosion and sediment control (SESC) plan	A SESC plan, including erosion and sedimentation control measures, will be implemented to minimize potential water quality impacts during construction and operation of the Onshore Facilities.	Water quality	Revolution Wind
Coast-1	Construction and installation	Siting of onshore facilities	Onshore Facilities will be sited within previously disturbed and developed areas to the extent practicable.	Coastal and terrestrial habitats	Revolution Wind
Coast-2	Construction and installation, O&M, and decommissioning	OSRP	Accidental spill or release of oils or other hazardous materials offshore will be managed through the OSRP.	Coastal and terrestrial habitats	Revolution Wind

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
Coast-3	Construction and installation	HDD contingency plan	At the landfall location, drilling fluids will be managed within a contained system to be collected for reuse as necessary. An HDD Contingency Plan will be prepared and implemented to minimize the potential risks associated with release of drilling fluids.	Coastal and terrestrial habitats	Revolution Wind
Coast-4	Construction and installation, O&M, and decommissioning	Spill prevention and control measures and SESC plan	Compliance with the RIPDES General Permit for Stormwater Discharges associated with Construction Activity which requires the implementation of a SESC Plan and spill prevention and control measures.	Coastal and terrestrial habitats	Revolution Wind
Coast-5	Construction and installation	SESC plan	The operator must implement the site-specific SESC Plan and maintain it during the entire construction process until the entire worksite is permanently stabilized by vegetation or other means. The measures employed in the SESC Plan use best management practices (BMPs) to minimize the opportunity for turbid discharges leaving a construction work area.	Coastal and terrestrial habitats	Revolution Wind
Coast-6	Construction and installation, O&M, and decommissioning	Spill prevention and control measures	The spill prevention and control measures mandate that the operator identify all areas where spills can occur and their accompanying drainage points. The operator must also establish spill prevention and control measures to reduce the chance of spills, stop the source of spills, contain and clean up spills, and dispose of materials contaminated by spills. Spill prevention and control training will be provided for relevant personnel.	Coastal and terrestrial habitats	Revolution Wind
Coast-7	Construction and installation and O&M	Vegetation management	The perimeter surrounding Onshore Facilities will be managed to encourage the growth of native grasses, ferns, and low-growing shrubs. The management strategy will include the removal of invasive plants in compliance with state and federal regulations (e.g., herbicide use will not be permitted within regulated wetlands).	Coastal and terrestrial habitats	Revolution Wind
Coast-8	Construction and installation	Avoidance/mitigation of wetland impacts	In accordance with Section 2.9(B)(1)(d) of the Freshwater Wetland Rules, the Onshore Facilities will be designed to avoid and minimize impacts to freshwater wetlands to the maximum extent practicable. Any wetlands that will be impacted as a result of the Project will be mitigated via the federal and state permitting process in accordance with Section 404 of the CWA and the Freshwater Wetland Rules.	Coastal and terrestrial habitats	Revolution Wind
Coast-9	Construction and installation, O&M, and decommissioning	SESC plan	An SESC Plan, including erosion and sedimentation control measures, will be implemented to minimize potential water quality impacts during construction and operation of the Onshore Facilities.	Coastal and terrestrial habitats	Revolution Wind
Coast-10	Construction and installation	Vegetation management	The documented sickle-leaved golden aster population on the OnSS parcel will be protected during construction.	Coastal and terrestrial habitats	Revolution Wind
Ben-1	Preconstruction	Siting of RWF and RWEC	The RWF and RWEC will be sited to avoid and minimize impacts to sensitive habitats (e.g., hard-bottom habitats) to the extent practicable.	Benthic habitat and invertebrates	Revolution Wind
Ben-2	Construction and installation	Cable burial risk assessment	The IAC, OSS-Link Cable, and RWEC will avoid identified shallow hazards to the extent practicable.	Benthic habitat and invertebrates	Revolution Wind
Ben-3	Construction and installation	Cable burial risk assessment	To the extent feasible, installation of the IAC, OSS-Link Cable, and RWEC will occur using equipment such as mechanical cutter, mechanical plow, or jet plow. The feasibility of cable burial equipment will be determined based on an assessment of seabed conditions and the Cable Burial Risk Assessment.	Benthic habitat and invertebrates	Revolution Wind
Ben-4	Construction and installation	Cable burial risk assessment	To the extent feasible, the RWEC, IAC, and OSS-Link Cable will typically target a burial depth of 4 to 6 ft (1.2 to 1.8 m) below seabed. The target burial depth will be determined based on an assessment of seabed	Benthic habitat and invertebrates	Revolution Wind

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
			conditions, seabed mobility, the risk of interaction with external hazards such as fishing gear and vessel anchors, and a site-specific Cable Burial Risk Assessment.		
Ben-5	Construction and installation	Cable burial risk assessment	DP vessels will be used for installation of the IACs, OSS-Link Cable, and RWEC to the extent practicable.	Benthic habitat and invertebrates	Revolution Wind
Ben-6	Preconstruction	Anchoring plan	A plan for vessels will be developed prior to construction to identify no-anchorage areas to avoid documented sensitive resources.	Benthic habitat and invertebrates	Revolution Wind
Ben-7	Preconstruction, construction and installation, and post-construction	Fisheries and benthic monitoring studies	Revolution Wind is committed to collaborative science with the commercial and recreational fishing industries pre-, during, and post-construction. Fisheries and benthic monitoring studies are being planned to assess the impacts associated with the Project on economically and ecologically important fisheries resources. These studies will be conducted in collaboration with the local fishing industry and will build upon monitoring efforts being conducted by affiliates of Revolution Wind at other wind farms in the region.	Benthic habitat and invertebrates	Revolution Wind
Ben-8	Preconstruction	Submerged aquatic vegetation (SAV) study	A preconstruction SAV survey will be completed to identify any new or expanded SAV beds. The Project design will be refined to avoid impacts to SAV to the greatest extent practicable.	Benthic habitat and invertebrates	Revolution Wind
Ben-9	Construction and installation, O&M, and decommissioning	Spill prevention and control measures	Revolution Wind will require all construction and operations vessels to comply with regulatory requirements related to the prevention and control of spills and discharges.	Benthic habitat and invertebrates	Revolution Wind
Ben-10	Construction and installation, O&M, and decommissioning	OSRP	Accidental spill or release of oils or other hazardous materials will be managed through the OSRP.	Benthic habitat and invertebrates	Revolution Wind
Ben-11	Construction and installation, O&M, and decommissioning	Marine debris awareness training	All vessels will comply with United States Coast Guard (USCG) and EPA regulations that require operators to develop waste management plans, post informational placards, manifest trash sent to shore, and use special precautions such as covering outside trash bins to prevent accidental loss of solid materials. Vessels will also comply with BOEM lease stipulations that require adherence to Notice to Lessee (NTL) 2015-G03, which instructs operators to exercise caution in the handling and disposal of small items and packaging materials, requires the posting of placards at prominent locations on offshore vessels and structures, and mandates a yearly marine trash and debris awareness training and certification process.	Benthic habitat and invertebrates	Revolution Wind
Ben-12	Construction and installation	Soft start before pile driving	A ramp-up or soft start will be used at the beginning of each pile segment during impact pile driving and/or vibratory pile driving to provide additional protection to mobile species in the vicinity by allowing them to vacate the area prior to the commencement of pile-driving activities.	Benthic habitat and invertebrates	Revolution Wind
Ben-13	Construction and installation and O&M	Lighting minimization	Construction and operational lighting will be limited to the minimum necessary to ensure safety and compliance with applicable regulations.	Benthic habitat and invertebrates	Revolution Wind
Ben-14	Construction and installation	Time of year (TOY) restrictions	Revolution Wind will continue to coordinate with RIDEM and NOAA NMFS regarding TOY restrictions through the permitting process and will adhere to requirements imposed by these agencies.	Benthic habitat and invertebrates	Revolution Wind
Ben-15	Construction, O&M	Micrositing	Avoid and minimize adverse impacts to complex benthic habitats by micrositing WTG locations into low multibeam backscatter return areas and restricting seafloor disturbance (from anchoring, jack-up legs,	Benthic habitat and invertebrates	BOEM and BSEE

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
			etc.) during construction to avoid and minimize impacts to higher multibeam backscatter return areas to the extent possible.		
Ben-16	Preconstruction and construction and installation	Siting of RWF and RWEC	The RWF and RWEC would use HRG surveys and other site characterization methods to identify, avoid, and minimize impacts to complex bottom habitats to the extent practicable	Benthic habitat and invertebrates	Revolution Wind
Ben-17	Construction and installation, O&M, and decommissioning	Fisheries and benthic monitoring plan	Revolution Wind has developed a fisheries and benthic habitat monitoring plan (dated October 2021) that has been prepared in accordance with recommendations set forth in Guidelines for Providing Benthic Habitat Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585 (BOEM 2019).	Benthic habitat and invertebrates	Revolution Wind
Fin-1	Construction and installation	Cable burial risk assessment	To the extent feasible, installation of the IAC, OSS-Link Cable, and RWEC will occur using equipment such as mechanical cutter, mechanical plow, or jet plow. The feasibility of cable burial equipment will be determined based on an assessment of seabed conditions and the Cable Burial Risk Assessment.	Finfish and essential fish habitat	Revolution Wind
Fin-2	Construction and installation	TOY restrictions	Based on the coordination with RIDEM and NOAA NMFS to date, in general, offshore site preparation for and installation of the RWEC-RI north of the Convention on the International Regulations for Preventing Collisions at Sea ("COLREGS") line of demarcation will occur between the day after Labor Day and February 1 to avoid and minimize impacts to winter flounder (*Pseudopleuronectes americanus*) and shellfish. Revolution Wind will continue to coordinate with RIDEM and NOAA NMFS regarding TOY restrictions through the permitting process and will adhere to requirements imposed by these agencies.	Finfish and essential fish habitat	Revolution Wind
Fin-3	Construction and installation	Cable burial risk assessment	To the extent feasible, the RWEC, IAC, and OSS-Link Cable will typically target a burial depth of 4 to 6 ft (1.2 to 1.8 m) below seabed. The target burial depth will be determined based on an assessment of seabed conditions, seabed mobility, the risk of interaction with external hazards such as fishing gear and vessel anchors, and a site-specific Cable Burial Risk Assessment.	Finfish and essential fish habitat	Revolution Wind
Fin-4	Construction and installation	Cable burial risk assessment	DP vessels will be used for installation of the IACs, OSS-Link Cable, and RWEC to the extent practicable.	Finfish and essential fish habitat	Revolution Wind
Fin-5	Preconstruction	Anchoring plan	A plan for vessels will be developed prior to construction to identify no-anchorage areas to avoid documented sensitive resources.	Finfish and essential fish habitat	Revolution Wind
Fin-6	Preconstruction, construction and installation, and post-construction	Fisheries and benthic monitoring studies	Revolution Wind is committed to collaborative science with the commercial and recreational fishing industries pre-, during, and post-construction. Fisheries and benthic monitoring studies are being planned to assess the impacts associated with the Project on economically and ecologically important fisheries resources. These studies will be conducted in collaboration with the local fishing industry and will build upon monitoring efforts being conducted by affiliates of Revolution Wind at other wind farms in the region.	Finfish and essential fish habitat	Revolution Wind
Fin-7	Construction and installation, O&M, and decommissioning	Spill prevention and control measures	Revolution Wind will require all construction and operations vessels to comply with regulatory requirements related to the prevention and control of spills and discharges.	Finfish and essential fish habitat	Revolution Wind
Fin-8	Construction and installation, O&M, and decommissioning	OSRP	Accidental spill or release of oils or other hazardous materials will be managed through the OSRP.	Finfish and essential fish habitat	Revolution Wind

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
Fin-9	Construction and installation	Soft start before pile driving	A ramp-up or soft start will be used at the beginning of each pile segment during impact pile driving and/or vibratory pile driving to provide additional protection to mobile species in the vicinity by allowing them to vacate the area prior to the commencement of pile-driving activities.	Finfish and essential fish habitat	Revolution Wind
Fin-10	Construction and installation and O&M	Lighting minimization	Construction and operational lighting will be limited to the minimum necessary to ensure safety and compliance with applicable regulations.	Finfish and essential fish habitat	Revolution Wind
Fin-11	Construction and installation, O&M, and decommissioning	Marine debris awareness training	All vessels will comply with USCG and EPA regulations that require operators to develop waste management plans, post informational placards, manifest trash sent to shore, and use special precautions such as covering outside trash bins to prevent accidental loss of solid materials. Vessels will also comply with BOEM lease stipulations that require adherence to NTL 2015-G03, which instructs operators to exercise caution in the handling and disposal of small items and packaging materials, requires the posting of placards at prominent locations on offshore vessels and structures, and mandates a yearly marine trash and debris awareness training and certification process.	Finfish and essential fish habitat	Revolution Wind
Fin-12	Construction and installation	TOY restrictions	Revolution Wind will continue to coordinate with RIDEM and NOAA NMFS regarding TOY restrictions through the permitting process and will adhere to requirements imposed by these agencies.	Finfish and essential fish habitat	Revolution Wind
Fin-13	Construction and installation, post-construction and installation monitoring	Gear identification	To facilitate identification of gear on any entangled animals, all trap/pot gear used in the surveys would be uniquely marked to distinguish it from other commercial or recreational gear.	Finfish and essential fish habitat	Revolution Wind, BOEM, BSEE, and NMFS
MM-1	Construction and installation	Establishment of exclusion and monitoring zones for impact pile driving	Exclusion and monitoring zones for marine mammals and sea turtles will be established for impact and vibratory pile-driving activities.	Marine mammals	Revolution Wind
MM-2	Construction and installation	Impact and vibratory pile-driving mitigation measures	The following measures will be implemented for impact and vibratory pile-driving activities. These measures will include seasonal restrictions, soft-start measures, shutdown procedures, marine mammal and sea turtle monitoring protocols, the use of qualified and National Oceanic and Atmospheric Administration (NOAA)-approved Protected Species Observers, and noise attenuation systems such as bubble curtains, as appropriate.	Marine mammals	Revolution Wind
MM-3	Construction and installation, O&M, and decommissioning	Vessel speed restrictions	Vessels will follow NOAA guidelines for marine mammal and sea turtle strike avoidance measures, including vessel speed restrictions.	Marine mammals	Revolution Wind
MM-4	Construction and installation, O&M, and decommissioning	Marine mammal, sea turtle, and marine debris awareness training	All personnel working offshore will receive training on marine mammal and sea turtle awareness and marine debris awareness.	Marine mammals	Revolution Wind
MM-5	Construction and installation, O&M, and decommissioning	Spill prevention and control measures	Revolution Wind will require all construction and operations vessels to comply with regulatory requirements related to the prevention and control of spills and discharges.	Marine mammals	Revolution Wind
MM-6	Construction and installation, O&M, and decommissioning	OSRP	Accidental spill or release of oils or other hazardous materials offshore will be managed through the OSRP.	Marine mammals	Revolution Wind
MM-7	Construction and installation, O&M, and decommissioning	Marine debris awareness training	All vessels will comply with USCG and EPA regulations that require operators to develop waste management plans, post informational placards, manifest trash sent to shore, and use special precautions such as covering outside trash bins to prevent accidental loss of solid materials. Vessels will also comply with BOEM lease stipulations that require adherence to NTL 2015-G03, which instructs operators to exercise caution in the	Marine mammals	Revolution Wind

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
			handling and disposal of small items and packaging materials, requires the posting of placards at prominent locations on offshore vessels and structures, and mandates a yearly marine trash and debris awareness training and certification process.		
MM-8	Construction and installation	Cable burial risk assessment	To the extent feasible, the RWEC, IAC, and OSS-Link Cable will typically target a burial depth of 4 to 6 ft (1.2 to 1.8 m) below seabed. The target burial depth will be determined based on an assessment of seabed conditions, seabed mobility, the risk of interaction with external hazards such as fishing gear and vessel anchors, and a site-specific Cable Burial Risk Assessment.	Marine mammals	Revolution Wind
MM-9	Construction and installation, post-construction and installation monitoring	Gear identification	To facilitate identification of gear on any entangled animals, all trap/pot gear used in the surveys would be uniquely marked to distinguish it from other commercial or recreational gear.	Marine mammals	Revolution Wind, BOEM, BSEE, and NMFS
MM-10	Construction and installation and post-construction and installation	MMPA application measures	Revolution Wind is committed to minimizing impacts to marine mammal species through a comprehensive monitoring and mitigation program. The mitigation measures identified in the MMPA Incidental Take Regulations application to be implemented include, but are not limited to, the following: 1. Noise attenuation through use of a noise mitigation system; 2. Seasonal restrictions; 3. Standard PSO training and equipment requirements; 4. Visual monitoring; including low visibility monitoring tools; 5. Passive acoustic monitoring; 6. Establishment and monitoring of shutdown zones 7. Pre-start clearance; 8. Ramp-up (soft-start) procedures; 9. Operations monitoring; 10. Operational shutdowns and delay; 11. Sound source measurements of at least one foundation installation 12. Survey sighting coordination; 13. Vessel strike avoidance procedures; and Data recording and reporting procedures.	Marine mammals	BOEM and BSEE
ST-1	Construction and installation	Establishment of exclusion and monitoring zones for impact pile driving	Exclusion and monitoring zones for marine mammals and sea turtles will be established for impact and vibratory pile-driving activities.	Sea turtles	Revolution Wind
ST-2	Construction and installation	Impact and vibratory pile-driving mitigation measures	The following measures will be implemented for impact and vibratory pile-driving activities. These measures will include seasonal restrictions, soft-start measures, shut-down procedures, marine mammal and sea turtle monitoring protocols, the use of qualified and NOAA-approved Protected Species Observers, and noise attenuation systems such as bubble curtains, as appropriate.	Sea turtles	Revolution Wind
ST-3	Construction and installation, O&M, and decommissioning	Vessel speed restriction	Vessels will follow NOAA guidelines for marine mammal and sea turtle strike avoidance measures, including vessel speed restrictions.	Sea turtles	Revolution Wind
ST-4	Construction and installation, O&M, and decommissioning	Marine mammal, sea turtle, and marine debris awareness training	All personnel working offshore will receive training on marine mammal and sea turtle awareness and marine debris awareness.	Sea turtles	Revolution Wind
ST-5	Construction and installation, O&M, and decommissioning	Spill prevention and control measures	Revolution Wind will require all construction and operations vessels to comply with regulatory requirements related to the prevention and control of spills and discharges.	Sea turtles	Revolution Wind

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
ST-6	Construction and installation, O&M, and decommissioning	OSRP	Accidental spill or release of oils or other hazardous materials offshore will be managed through the OSRP.	Sea turtles	Revolution Wind
ST-7	Construction and installation, O&M, and decommissioning	Marine debris awareness training	All vessels will comply with USCG and EPA regulations that require operators to develop waste management plans, post informational placards, manifest trash sent to shore, and use special precautions such as covering outside trash bins to prevent accidental loss of solid materials. Vessels will also comply with BOEM lease stipulations that require adherence to NTL 2015-G03, which instructs operators to exercise caution in the handling and disposal of small items and packaging materials, requires the posting of placards at prominent locations on offshore vessels and structures, and mandates a yearly marine trash and debris awareness training and certification process.	Sea turtles	Revolution Wind
ST-8	Construction and installation	Cable burial risk assessment	To the extent feasible, the RWEC, IAC, and OSS-Link Cable will typically target a burial depth of 4 to 6 ft (1.2 to 1.8 m) below seabed. The target burial depth will be determined based on an assessment of seabed conditions, seabed mobility, the risk of interaction with external hazards such as fishing gear and vessel anchors, and a site-specific Cable Burial Risk Assessment.	Sea turtles	Revolution Wind
ST-9	Construction and installation, post-construction and installation monitoring	Gear identification	To facilitate identification of gear on any entangled animals, all trap/pot gear used in the surveys would be uniquely marked to distinguish it from other commercial or recreational gear.	Sea turtles	Revolution Wind, BOEM, BSEE, and NMFS
Bird-1	Construction and installation	TOY restrictions for tree and shrub removal	To the extent feasible, tree and shrub removal for Onshore Facilities will occur outside the avian nesting and bat roosting period, May 1 through August 15. If tree and shrub removal cannot be avoided during this season, Revolution Wind will coordinate with appropriate agencies to determine appropriate course of action.	Birds	Revolution Wind
Bird-2	Construction and installation and O&M	WTG spacing and layout	Revolution Wind is committed to an indicative layout scenario with WTGs sited in a grid with approximately 1.15-mi (1-nm) by 1.15-mi (1-nm) spacing that aligns with other proposed adjacent offshore wind projects in the RI/MA WEA. This wide spacing of WTGs will allow avian species to avoid individual WTGs and minimize risk of potential collision.	Birds	Revolution Wind
Bird-3	Construction and installation and O&M	Lighting minimization	Construction and operational lighting will be limited to the minimum necessary to ensure safety and compliance with applicable regulations.	Birds	Revolution Wind
Bird-4	Construction and installation and O&M	Lighting minimization with lighting technology	Revolution Wind will comply with Federal Aviation Administration (FAA) and USCG requirements for lighting while using lighting technology (e.g., low-intensity strobe lights) that minimizes impacts on avian species.	Birds	Revolution Wind
Bird-5	Construction and installation, O&M, and decommissioning	OSRP	Accidental spill or release of oils or other hazardous materials offshore will be managed through the OSRP.	Birds	Revolution Wind
Bird-6	Construction and installation, O&M, and decommissioning	Marine debris awareness training	All vessels will comply with USCG and EPA regulations that require operators to develop waste management plans, post informational placards, manifest trash sent to shore, and use special precautions such as covering outside trash bins to prevent accidental loss of solid materials. Vessels will also comply with BOEM lease stipulations that require adherence to NTL 2015-G03, which instructs operators to exercise caution in the handling and disposal of small items and packaging materials, requires the posting of placards at prominent locations on offshore vessels and structures, and mandates a yearly marine trash and debris awareness training and certification process.	Birds	Revolution Wind
Bird-7	Construction and installation, O&M, and decommissioning	SESC plan	An SESC Plan, including erosion and sedimentation control measures, will be implemented to minimize potential water quality impacts during construction and operation of the Onshore Facilities.	Birds	Revolution Wind

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
Bird-8	Construction and installation	Siting of onshore facilities	Onshore Facilities will be sited within previously disturbed and developed areas to the extent practicable.	Birds	Revolution Wind
Bird-9	Construction and installation	Burial of onshore transmission cables	The Onshore Transmission Cables will be buried; therefore, avoiding the risk to avian and bat species associated with overhead lines.	Birds	Revolution Wind
Bird-10	O&M	Adaptive mitigation for birds and bats	Revolution Wind has developed a draft Avian and Bat Post-Construction Monitoring Plan (see Appendix G and COP Appendix AA) for the Project that summarizes the approach to monitoring; describes overarching monitoring goals and objectives; identifies the key avian species, priority questions, and data gaps unique to the region and Project Area that will be addressed through monitoring; and describes methods and time frames for data collection, analysis, and reporting. Post-construction monitoring will assess impacts of the Project with the purpose of filling select information gaps and supporting validation of the Project's Avian Risk Assessment. Focus may be placed on improving knowledge of ESA-listed species occurrence and movements offshore, avian collision risk, species/species-group displacement, or similar topics. Where possible, monitoring conducted by Revolution Wind will build on and align with post-construction monitoring conducted by the other Orsted/Eversource offshore wind projects in the Northeast region. Revolution Wind will engage with federal and state agencies and environmental groups (eNGOs) to identify appropriate monitoring options and technologies and to facilitate acceptance of the final plan.	Birds	Revolution Wind, BOEM, BSEE, USFWS
Bird-11	Construction and installation, O&M, and decommissioning	Adaptive mitigation for birds and bats	Revolution Wind will document any dead (or injured) birds/bats found incidentally on vessels and structures during construction, O&M, and decommissioning and provide an annual report to BOEM and United States Fish and Wildlife Service (USFWS).	Birds	Revolution Wind
Bird-12	Construction and installation	TOY restrictions	Revolution Wind will continue to coordinate with RIDEM and NOAA NMFS regarding TOY restrictions through the permitting process and will adhere to requirements imposed by these agencies.	Birds	Revolution Wind
Bat-1	Construction and installation and O&M	Lighting minimization	Construction and operational lighting will be limited to the minimum necessary to ensure safety and to comply with applicable regulations.	Bats	Revolution Wind
Bat-2	Construction and installation	TOY restrictions for tree and shrub removal	To the extent feasible, tree and shrub removal for Onshore Facilities will occur outside the avian nesting and bat roosting period; May 1 through August 15. If tree and shrub removal cannot be avoided during this season, Revolution Wind will coordinate with appropriate agencies to determine appropriate course of action.	Bats	Revolution Wind
Bat-3	Construction and installation and O&M	WTG spacing and layout	Revolution Wind is committed to an indicative layout scenario with WTGs sited in a grid with approximately 1.15-mi (1-nm) by 1.15-mi (1-nm) spacing that aligns with other proposed adjacent offshore wind projects in the RI/MA WEA. This wide spacing of WTGs will allow avian and bat species to avoid individual WTGs and minimize risk of potential collision.	Bats	Revolution Wind
Bat-4	Construction and installation and O&M	Lighting minimization with lighting technology	Revolution Wind will comply with FAA and USCG requirements for lighting while using lighting technology (e.g., low-intensity strobe lights) that minimize impacts on avian and bat species.	Bats	Revolution Wind
Bat-5	Construction and installation, O&M, and decommissioning	OSRP	Accidental spill or release of oils or other hazardous materials offshore will be managed through the OSRP.	Bats	Revolution Wind
Bat-6	Construction and installation, O&M, and decommissioning	SESC plan	An SESC Plan, including erosion and sedimentation control measures, will be implemented to minimize potential water quality impacts during construction and operation of the Onshore Facilities.	Bats	Revolution Wind
Bat-7	Construction and installation	Siting of onshore facilities	Onshore Facilities will be sited within previously disturbed and developed areas to the extent practicable.	Bats	Revolution Wind
Bat-8	Construction and installation	Burial of onshore transmission cables	The Onshore Transmission Cables will be buried; therefore, avoiding the risk to avian and bat species associated with overhead lines.	Bats	Revolution Wind

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
Bat-9	Construction and installation, O&M, and decommissioning	Adaptive mitigation for birds and bats	Revolution Wind will document any dead (or injured) birds/bats found incidentally on vessels and structures during construction, O&M, and decommissioning and provide an annual report to BOEM and USFWS.	Bats	Revolution Wind
Bat-10	Construction and installation	TOY restrictions	Revolution Wind will continue to coordinate with RIDEM and NOAA NMFS regarding TOY restrictions through the permitting process and will adhere to requirements imposed by these agencies.	Bats	Revolution Wind
Bat-11	Construction	Minimization of long=term impacts	Comply with the Northern Long-Eared Bat 4(d) rule (81 FR 1900-1922) to avoid and minimize long-term impacts on the species and sensitive upland habitats.	Bats	BOEM and USFWS
CR-1	Construction and installation and O&M	Aircraft detection lighting system (ADLS) (or a similar system)	Revolution Wind will use Aircraft Detection Lighting System (ADLS) (or a similar system), pursuant to approval by the FAA and commercial and technical feasibility at the time of FDR/FIR approval.	Cultural resources	Revolution Wind
CR-2	Construction and installation and O&M	WTG design	RWF WTGs will have uniform design, speed, height, and rotor diameter, thereby mitigating visual clutter.	Cultural resources	Revolution Wind
CR-3	Construction and installation and O&M	WTG design	The WTGs will be painted Pure White (RAL 9010) to Light Grey (RAL 7035), as recommended by BOEM and the FAA. This color white of the turbines generally blends well with the sky at the horizon and eliminates the need for daytime warning lights or red paint marking of the blade tips.	Cultural resources	Revolution Wind
CR-4	Construction and installation	Burial of onshore transmission cables and ICF interconnection	The Onshore Transmission Cable and ICF Interconnection ROW will be buried, minimizing potential impacts to adjacent properties.	Cultural resources	Revolution Wind
CR-5	Construction and installation and O&M	Onshore facilities location	The Onshore Facilities will be located adjacent to an existing substation on a parcel zoned for commercial and industrial/utility use.	Cultural resources	Revolution Wind
CR-6	Construction and installation and O&M	Onshore facilities screening	Screening will be implemented at the aboveground Onshore Facilities to the extent feasible, to reduce potential visibility and noise.	Cultural resources	Revolution Wind
CR-7	Preconstruction	Siting of RWF and RWEC	The RWF and RWEC will be sited to avoid or minimize impacts to potential submerged cultural sites and paleolandforms, to the extent practicable.	Cultural resources	Revolution Wind
CR-8	Construction and installation and O&M	Marine survey design, execution, and interpretation	Native American Tribal representatives were involved, and will continue to be involved, in marine survey protocol design, execution of the surveys, and interpretation of the results.	Cultural resources	Revolution Wind
CR-9	Preconstruction	Anchoring plan	A plan for vessels will be developed prior to construction to identify no-anchorage areas to avoid documented sensitive resources.	Cultural resources	Revolution Wind
CR-10	Construction and installation	Unanticipated discovery plan (UDP)	An Unanticipated Discovery Plan (UDP) will be implemented that will include stop-work and notification procedures to be followed if a potentially significant archaeological resource is encountered during construction.	Cultural resources	Revolution Wind
CR-11	Construction and installation	Siting of onshore facilities	Onshore Facilities will be sited within previously disturbed and developed areas to the extent practicable.	Cultural resources	Revolution Wind
CR-12	Preconstruction	Siting of onshore facilities	Onshore Facilities will be sited to avoid or minimize impacts to potential terrestrial archeological resources, to the extent practicable.	Cultural resources	Revolution Wind
VR-1	Construction and installation	ADLS (or a similar system)	Revolution Wind will use ADLS (or a similar system), pursuant to approval by the FAA and commercial and technical feasibility at the time of FDR/FIR approval.	Visual resources	Revolution Wind
VR-2	Construction and installation and O&M	WTG design	RWF WTGs will have uniform design, speed, height, and rotor diameter, thereby mitigating visual clutter.	Visual resources	Revolution Wind

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
VR-3	Construction and installation and O&M	WTG design	The WTGs will be painted Pure White (RAL 9010) to Light Grey (RAL 7035), as recommended by BOEM and the FAA. This color white of the turbines generally blends well with the sky at the horizon and eliminates the need for daytime warning lights or red paint marking of the blade tips.	Visual resources	Revolution Wind
VR-4	Construction and installation	Burial of onshore transmission cables and ICF interconnection	The Onshore Transmission Cable and ICF Interconnection ROW will be buried, minimizing potential impacts to adjacent properties.	Visual resources	Revolution Wind
VR-5	Construction and installation and O&M	Onshore facilities screening	Screening will be implemented at the aboveground Onshore Facilities to the extent feasible, to reduce potential visibility and noise.	Visual resources	Revolution Wind
VR-6	Construction and installation and O&M	Onshore facilities design	Non-reflective paints and finishes will be used to the extent practicable on Onshore Facilities to minimize reflected glare.	Visual resources	Revolution Wind
VR-7	Construction and installation and O&M	Lighting minimization at the ONSS and ICF	Lighting at the OnSS and ICF will be kept to a minimum and turned on only as needed by manual switch.	Visual resources	Revolution Wind
Demo-1	Construction and installation, O&M, and decommissioning	Employment of local workers	Where possible, local workers will be hired to meet labor needs for Project construction, O&M, and decommissioning.	Demographics, employment, and economics	Revolution Wind
Demo-2	Construction and installation	TOY restrictions of onshore facility construction	The Onshore Facilities construction schedule will be designed to minimize impacts to the local community during the summer tourist season, generally between Memorial Day and Labor Day.	Demographics, employment, and economics	Revolution Wind
Demo-3	Construction and installation and O&M	Onshore facilities screening	Screening will be implemented at the aboveground Onshore Facilities to the extent feasible, to reduce potential visibility and noise.	Demographics, employment, and economics	Revolution Wind
Demo-4	Construction and installation	Coordination with local authorities to address environmental and community concerns	Revolution Wind will coordinate with local authorities during construction of Onshore Facilities to minimize local traffic impacts; further, these Project components will be constructed in compliance with applicable regulations related to environmental and community concerns (e.g., traffic and erosion). In addition, traffic will be temporary and will not impact long-term property values.	Demographics, employment, and economics	Revolution Wind
Rec-1	Construction and installation	Fisheries communication plan	A comprehensive communication plan will be implemented during offshore construction to inform all mariners, including commercial and recreational fishermen, and recreational boaters of construction activities and vessel movements. Communication will be facilitated through a Project website, public notices to mariners and vessel float plans, and a fisheries liaison. Revolution Wind will submit information to the USCG to issue Local Notice to Mariners during offshore installation activities.	Recreation and tourism	Revolution Wind
Rec-2	Construction and installation	TOY restrictions on onshore facilities construction	The Onshore Facilities construction schedule will be designed to minimize impacts to the local community during the summer tourist season, generally between Memorial Day and Labor Day.	Recreation and tourism	Revolution Wind
Rec-3	Construction and installation	Coordination with local authorities to address environmental and community concerns	Revolution Wind will coordinate with local authorities during construction of Onshore Facilities to minimize local traffic impacts; further, these Project components will be constructed in compliance with applicable regulations related to environmental and community concerns (e.g., traffic and erosion). In addition, traffic will be temporary and will not impact long-term property values.	Recreation and tourism	Revolution Wind
ComFish-1	Construction and installation and O&M	WTG spacing and layout	Revolution Wind is committed to an indicative layout scenario with WTGs sited in a grid with approximately 1.15-mi (1-nm) by 1.15-mi (1-nm) spacing that aligns with other proposed adjacent offshore wind projects in the RI/MA WEA. This layout has been confirmed through expert analysis to allow for safe navigation without the need for additional designated transit lanes. This layout will also provide a uniform, wide spacing among structures to facilitate search and rescue operations.	Commercial and recreational fishing	Revolution Wind

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
ComFish-2	Construction and installation	Cable burial risk assessment	To the extent feasible, installation of the Inter-Array Cable, OSS Interconnector Cable, and RWEC will occur using equipment such as mechanical cutter, mechanical plow, or jet plow. The feasibility of cable burial equipment will be determined based on an assessment of seabed conditions and the Cable Burial Risk Assessment.	Commercial and recreational fishing	Revolution Wind
ComFish-3	Construction and installation	Cable burial risk assessment	To the extent feasible, the RWEC, IAC, and OSS-Link Cable will typically target a burial depth of 4 to 6 ft (1.2 to 1.8 m) below seabed. The target burial depth will be determined based on an assessment of seabed conditions, seabed mobility, the risk of interaction with external hazards such as fishing gear and vessel anchors, and a site-specific Cable Burial Risk Assessment.	Commercial and recreational fishing	Revolution Wind
ComFish-4	Construction and installation and O&M	Implementation of BMPS	As appropriate and feasible, BMPs will be implemented to minimize impacts on fisheries, as described in the *Guidelines for Providing Information on Fisheries Social and Economic Conditions for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585* (BOEM 2020).	Commercial and recreational fishing	Revolution Wind
ComFish-5	Preconstruction, construction and installation, and post-construction	Fisheries and benthic monitoring studies	Revolution Wind is committed to collaborative science with the commercial and recreational fishing industries pre-, during, and postconstruction. Fisheries and benthic monitoring studies are being planned to assess the impacts associated with the Project on economically and ecologically important fisheries resources. These studies will be conducted in collaboration with the local fishing industry and will build upon monitoring efforts being conducted by affiliates of Revolution Wind at other wind farms in the region.	Commercial and recreational fishing	Revolution Wind
ComFish-6	Construction and installation and O&M	WTG lighting and ais installation	Each WTG will be marked and lit with both USCG and approved aviation lighting. Automatic Identification Systems (AISs) will be installed at the RWF marking the corners of the wind farm to assist in safe navigation.	Commercial and recreational fishing	Revolution Wind
ComFish-7	Construction and installation, O&M, and decommissioning	Spill prevention and control measures	Revolution Wind will require all construction and operations vessels to comply with regulatory requirements related to the prevention and control of spills and discharges.	Commercial and recreational fishing	Revolution Wind
ComFish-8	Construction and installation, O&M, and decommissioning	OSRP	Accidental spill or release of oils or other hazardous materials offshore will be managed through the OSRP.	Commercial and recreational fishing	Revolution Wind
ComFish-9	Construction and installation, O&M, and decommissioning	Marine debris awareness training	All vessels will comply with USCG and EPA regulations that require operators to develop waste management plans, post informational placards, manifest trash sent to shore, and use special precautions such as covering outside trash bins to prevent accidental loss of solid materials. Vessels will also comply with BOEM lease stipulations that require adherence to NTL 2015-G03, which instructs operators to exercise caution in the handling and disposal of small items and packaging materials, requires the posting of placards at prominent locations on offshore vessels and structures, and mandates a yearly marine trash and debris awareness training and certification process.	Commercial and recreational fishing	Revolution Wind
ComFish-10	Construction and installation and O&M	Fisheries communication plan	Communications and outreach with the commercial and recreational fishing industries will be guided by the Project-specific Fisheries Communication Plan. Revolution Wind has agreed to share fisheries monitoring data with regulatory agencies and interested stakeholders upon request. Data sharing will occur on an annual cycle, which may be unique to each survey, and all data will be subject to rigorous quality assurance and quality control criterion prior to dissemination.	Commercial and recreational fishing	Revolution Wind
ComFish-11	Construction and installation, O&M, and decommissioning	Coordination with appropriate federal, state, and local contacts	Project construction, O&M, and decommissioning activities will be coordinated with appropriate contacts at USCG, Naval Undersea Warfare Center (NUWC)-Newport RI, the Northeast Marine Pilots Association, and Department of Defense (DoD) command headquarters.	Commercial and recreational fishing	Revolution Wind

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
ComFish-12	Preconstruction	Siting of RWEC	RWEC was sited to avoid conflicts with DoD use areas and navigational areas identified by the USCG, as applicable.	Commercial and recreational fishing	Revolution Wind
ComFish-13	Construction and installation	Fisheries communication plan	A comprehensive communication plan will be implemented during offshore construction to inform all mariners, including commercial and recreational fishermen, and recreational boaters of construction activities and vessel movements. Communication will be facilitated through a Fisheries Liaison, Project website, and public notices to mariners and vessel float plans (in coordination with USCG).	Commercial and recreational fishing	Revolution Wind
ComFish-14	Construction and installation	TOY restrictions	Revolution Wind will continue to coordinate with RIDEM and NOAA NMFS regarding TOY restrictions through the permitting process and will adhere to requirements imposed by these agencies.	Commercial and recreational fishing	Revolution Wind
Nav-1	Construction and installation and O&M	WTG spacing and layout	Revolution Wind is committed to an indicative layout scenario with WTGs sited in a grid with approximately 1.15-mi (1-nm) by 1.15-mi (1-nm) spacing that aligns with other proposed adjacent offshore wind projects in the RI-MA WEA. This layout has been confirmed through expert analysis to allow for safe navigation without the need for additional designated transit lanes. This layout will also provide a uniform, wide spacing among structures to facilitate search and rescue operations.	Navigation and vessel traffic	Revolution Wind
Nav-2	Construction and installation and O&M	WTG lighting and ais installation	Each WTG will be marked and lit with both USCG and approved aviation lighting. AIS will be installed at the RWF marking the corners of the wind farm to assist in safe navigation.	Navigation and vessel traffic	Revolution Wind
Nav-3	Construction and installation, O&M, and decommissioning	Spill prevention and control measures	Revolution Wind will require all construction and operations vessels to comply with regulatory requirements related to the prevention and control of spills and discharges.	Navigation and vessel traffic	Revolution Wind
Nav-4	Construction and installation, O&M, and decommissioning	OSRP	Accidental spill or release of oils or other hazardous materials offshore will be managed through the OSRP.	Navigation and vessel traffic	Revolution Wind
Nav-5	Construction and installation, O&M, and decommissioning	Coordination with appropriate federal, state, and local contacts	Project construction, O&M, and decommissioning activities will be coordinated with appropriate contacts at USCG, NUWC-Newport RI, the Northeast Marine Pilots Association, and DoD command headquarters.	Navigation and vessel traffic	Revolution Wind
Nav-6	Preconstruction	Siting of RWEC	RWEC was sited to avoid conflicts with DoD use areas and navigational areas identified by the USCG, as applicable.	Navigation and vessel traffic	Revolution Wind
Nav-7	Construction and installation	Fisheries communication plan	A comprehensive communication plan will be implemented during offshore construction to inform all mariners, including commercial and recreational fishermen, and recreational boaters of construction activities and vessel movements. Communication will be facilitated through a Fisheries Liaison, Project website, and public notices to mariners and vessel float plans (in coordination with USCG).	Navigation and vessel traffic	Revolution Wind
Nav-8	Construction and installation, O&M, and decommissioning	Consultation with appropriate federal, state, and local agencies	Revolution Wind will consult with USCG, NUWC-Newport RI, the Northeast Marine Pilots Association, and regional ferry service operators to avoid or reduce use conflicts.	Navigation and vessel traffic	Revolution Wind
Land-1	Construction and installation	Siting of onshore facilities	Onshore Facilities will be sited within previously disturbed and developed areas to the extent practicable.	Land use and coastal infrastructure	Revolution Wind
Land-2	Construction and installation	Coordination with local authorities to address environmental and community concerns	Revolution Wind will coordinate with local authorities during construction of Onshore Facilities to minimize local traffic impacts; further, these Project components will be constructed in compliance with applicable regulations related to environmental and community concerns (e.g., traffic and erosion). In addition, traffic will be temporary and will not impact long-term property values.	Land use and coastal infrastructure	Revolution Wind

EPM Number	Proposed Project Phase	EPM	Description	Resource Area Affected	BOEM's Identification of the Anticipated Enforcing Agency
Land-3	Construction and installation, O&M, and decommissioning	SESC plan	An SESC Plan, including erosion and sedimentation control measures, will be implemented to minimize potential water quality impacts during construction and operation of the Onshore Facilities.	Land use and coastal infrastructure	Revolution Wind
Other-1	Construction and installation and O&M	WTG spacing and layout	Revolution Wind is committed to an indicative layout scenario with WTGs sited in a grid with approximately 1.15-mi (1-nm) by 1.15-mi (1-nm) spacing that aligns with other proposed adjacent offshore wind projects in the RI/MA WEA. This layout has been confirmed through expert analysis to allow for safe navigation without the need for additional designated transit lanes. This layout will also provide a uniform, wide spacing among structures to facilitate search and rescue operations.	Other uses	Revolution Wind
Other-2	Construction and installation, O&M, and decommissioning	Consultation with appropriate federal, state, and local agencies	Revolution Wind will consult with USCG, NUWC-Newport RI, the Northeast Marine Pilots Association, and regional ferry service operators to avoid or reduce use conflicts.	Other uses	Revolution Wind
Other-3	Construction and installation and O&M	WTG lighting and ais installation	Each WTG will be marked and lit with both USCG and approved aviation lighting. AIS will be installed at the RWF marking the corners of the wind farm to assist in safe navigation.	Other uses	Revolution Wind
EJ-1	Construction and installation, O&M, and decommissioning	Employment of local workers	Where possible, local workers will be hired to meet labor needs for Project construction, O&M, and decommissioning.	Environmental justice	Revolution Wind
EJ-2	Construction and installation	TOY restrictions on onshore facilities construction	The Onshore Facilities construction schedule will be designed to minimize impacts to the local community during the summer tourist season, generally between Memorial Day and Labor Day.	Environmental justice	Revolution Wind
EJ-3	Construction and installation	Coordination with local authorities to address environmental and community concerns	Revolution Wind will coordinate with local authorities during construction of Onshore Facilities to minimize local traffic impacts; further, these Project components will be constructed in compliance with applicable regulations related to environmental and community concerns (e.g., traffic and erosion). In addition, traffic will be temporary and will not impact long-term property values.	Environmental justice	Revolution Wind
EJ-4	Construction and installation, O&M, and decommissioning	Studies of contaminated soil and groundwater in EJ focus areas	Investigation and remediation of contaminated soil and groundwater must be carried out in accordance with RIDEM regulations and policies regarding Environmental Justice Focus Areas including enhanced stakeholder outreach.	Environmental justice	Revolution Wind
EJ-5	Construction and installation	ADLS (or a similar system)	Revolution Wind will use ADLS (or a similar system), pursuant to approval by the FAA and commercial and technical feasibility at the time of FDR/FIR approval.	Environmental justice	Revolution Wind
EJ-6	Construction and installation	Burial of onshore transmission cables and ICF interconnection	The Onshore Transmission Cable and ICF Interconnection ROW will be buried, minimizing potential impacts to adjacent properties.	Environmental justice	Revolution Wind
EJ-7	Construction and installation and O&M	Onshore facilities screening	Screening will be implemented at the aboveground Onshore Facilities to the extent feasible, to reduce potential visibility and noise.	Environmental justice	Revolution Wind

Table F-2. Potential Additional Mitigation and Monitoring Measures

Mitigation Number	Proposed Project Phase	Mitigation or Monitoring Measure	Description	Resource Area Mitigated	BOEM's Identification of the Anticipated Enforcing Agency[3]
BOEM OCS Study 2020-039 – Radar Systems Mitigations to Operations					
1	O&M	Mitigation for ASR-8/9 radars	Operational mitigations identified for impacts on ASR-8/9: • Passive aircraft tracking using ADS-B or signal/transponder • Increasing 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 inhibit, velocity editing, plot amplitude thresholding (limiting the amplitude of certain signals) • Modification mitigations for ARSR-4 and for ASR-8/9 systems: • Utilizing the dual beams of the radar simultaneously • In-fill radars	Other uses – radar	BOEM and BSEE
2	O&M	Mitigation for oceanographic high frequency radars	To mitigate operational impacts on oceanographic high-frequency radars, the following options 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 Additional modifications identified for oceanographic high-frequency radar systems to mitigate impacts: • Signal processing enhancements • Antenna modifications	Other uses – radar	BOEM and BSEE
3	O&M	Mitigation for NEXRAD weather radar systems	Operational mitigations to NEXRAD weather radar systems include: • 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 – radar	BOEM and BSEE
4	Construction, O&M, decommissioning	Add conditions of COP approval	Require the following conditions of COP approval to mitigate potential impacts on ASR-8/9: • Notify NORAD 30 to 60 days ahead of Project completion and when the Project is complete and operational for radar adverse-impact management (RAM) scheduling • Contribute funds toward execution of the RAM • Curtailment of operations for national security or defense purposes as described in the leasing agreement	Other uses – radar	BOEM and BSEE
BOEM-proposed Bird and Bat Mitigation Measures					
1	O&M	Adaptive mitigation for birds and bats	If the reported post-construction bird and bat monitoring results (generated as part of Revolution Wind's *Avian and Bat Post- Construction Monitoring Framework* [Biodiversity Research Institute 2022]) indicate bird	Birds and bats	BOEM, BSEE, and USFWS

Mitigation Number	Proposed Project Phase	Mitigation or Monitoring Measure	Description	Resource Area Mitigated	BOEM's Identification of the Anticipated Enforcing Agency[3]
			and bat impacts deviate substantially from the impact analysis included in this EIS, then Revolution Wind must make recommendations for new mitigation measures or monitoring methods.		
2	O&M	Bird deterrents	Install bird deterrent devices to minimize bird attraction to operating turbines and on the OSS, where appropriate and where Revolution Wind determines such devices can be safely deployed. The Lessor must concur with proposed locations. Revolution Wind must confirm location(s) of bird deterrent devices as part of the as-built documentation submitted with the facility installation report.	Birds	USFWS
3	Construction	TOY restrictions	Conduct marine construction activities during approved in-water work windows developed in consultation with the Services.	Birds and bats	BOEM and USFWS
BOEM-proposed Commercial Fisheries and For-Hire Recreational Fishing Mitigation Measures					
1	Construction, O&M	Compensation for Gear Loss and Damage	The Lessee shall implement a gear loss and damage compensation program consistent with 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.	Commercial and recreational fisheries	BOEM and BSEE
2	Construction, O&M	Compensation for Lost Fishing Income	The Lessee shall implement a compensation program for lost income for commercial and recreational fishermen and other eligible fishing interests for construction and operations consistent with 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.	Commercial and recreational fisheries	BOEM and BSEE
3	O&M	Mobile gear friendly cable protection measures	Cable protection measures should reflect the pre-existing conditions at the site. This mitigation measure chiefly ensures that seafloor cable protection does not introduce new hangs for mobile fishing gear. Thus, the cable protection measures should be trawl-friendly with tapered/sloped edges. If cable protection is necessary in "non-trawlable" habitat, such as rocky habitat, then the Lessee should consider using materials that mirror the benthic environment.	Commercial and recreational fisheries	BOEM and BSEE
DOD-proposed Measures					
1	O&M	Fiber-optic sensing technology	Distributed fiber-optic sensing (DFOS) technology proposed for the wind energy project or associated transmission cables would be reviewed by the DOD to ensure that DFOS is not used to detect sensitive data from DOD activities, conduct any other type of surveillance of U.S. Government operations, or to otherwise pose a threat to national security.	Other uses – military and national security	BOEM, BSEE, and DOD
NHPA Mitigation Measures					
1	Construction and installation	Avoid or minimize and mitigate impacts on identified NRHP-eligible cultural resources	Mitigation measures for cultural resources are drafted in the memorandum of agreement (MOA) and its historic property treatment plans attached in Appendix K. Revolution Wind committed measures identified in COP Appendix BB – Cultural resources Avoidance, Minimization, and Mitigation Measures would also be incorporated by BOEM into COP approval. This MOA and its requirements would be set by BOEM under NHPA Section 106 as a condition of BOEM's signing the ROD. Under the MOA, adverse effects from the Project to NRHP-eligible cultural resources, including NHLs and TCPs, would be avoided, minimized, or mitigated in accordance with the NHPA Section 106 regulations (36 CFR 800) and in compliance with Section 110(f).	Cultural resources	BOEM, BSEE, USACE
BOEM-proposed Mitigation and Monitoring Measures in the BA submitted to NMFS					
1	Construction and installation, O&M, and decommissioning	Marine debris awareness training	The Lessee would ensure that vessel operators, employees, and contractors engaged in offshore activities pursuant to the approved COP complete marine trash and debris awareness training annually. The training	Finfish, marine mammals, sea turtles	BOEM and BSEE

Mitigation Number	Proposed Project Phase	Mitigation or Monitoring Measure	Description	Resource Area Mitigated	BOEM's Identification of the Anticipated Enforcing Agency[3]
			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 or by contacting BSEE. The training videos, slides, and related material may be downloaded directly from the website. Operators engaged in marine survey activities would continue to develop and use a marine trash and debris awareness training and certification process that reasonably assures that their employees and contractors are in fact trained. The training process would include the following elements: • Viewing of either a video or slide show by the personnel specified above; • An explanation from management personnel that emphasizes their commitment to the requirements; • Attendance measures (initial and annual); and • Recordkeeping and the availability of records for inspection by DOI. By January 31 of each year, the Lessee would submit to DOI an annual report 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 would send the reports via email to BOEM (at renewable_reporting@boem.gov) and to BSEE (at marinedebris@bsee.gov).		
2	Construction and installation and post- construction and installation	Marine debris elimination	Marking: Materials, equipment, tools, containers, and other items used in OCS activities which are of such shape or 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.	Birds, Finfish, marine mammals, sea turtles	BOEM and BSEE
3	Construction and installation and post- construction and installation	Incorporate LOA requirements	The measures required by the final MMPA Letter of Authorization (LOA) for Incidental Take Regulations would be incorporated into COP approval, and BOEM and/or BSEE will monitor compliance with these measures.	Marine mammals	BOEM and BSEE
4	Construction, O&M, and decommissioning	Passive acoustic monitoring (PAM)	Use PAM buoys or autonomous PAM devices to record ambient noise, marine mammals, and cod vocalizations in the Lease Area before, during, and immediately after construction (at least 3 years of operation) to monitor Project noise. The archival recorders must have a minimum capability of detecting and storing acoustic data on anthropogenic noise sources (such as vessel noise, pile driving, WTG operation, and whale detections), marine mammals, and cod vocalizations in the Lease Area. Monitoring would also occur during the decommissioning phase. The total number of PAM stations and array configuration will depend on the size of the zone to be monitored, the amount of noise expected in the area, and the characteristics of the signals being monitored to accomplish both monitoring during constructions, and also meet post-construction monitoring needs. Results must be provided within 90 days of construction completion and again within 90 days of the 1-year, 2-year, and 3-year anniversary of collection. The underwater acoustic monitoring must follow standardized measurement and processing methods and visualization metrics developed by the Atlantic Deepwater Ecosystem Observatory Network (ADEON) for the U.S. Mid- and South Atlantic OCS (see https://adeon.unh.edu/). At least two buoys must be independently deployed within or bordering the Lease Area or one or more buoys must be deployed in coordination with other acoustic monitoring efforts in the RI and MA Lease Areas.	Finfish, marine mammals, sea turtles	BOEM, BSEE, and NMFS
5	Construction and installation, post-construction and installation monitoring	PAM plan	BOEM, BSEE, and USACE would ensure that Revolution Wind prepares a PAM Plan that describes all proposed equipment, deployment locations, detection review methodology and other procedures, and protocols related to the required use of PAM for monitoring. This plan would be submitted to NMFS, BOEM and BSEE (at OSWsubmittals@bsee.gov) for review and concurrence at least 90 days prior to the planned start of pile driving. EFH conservation recommendations for PAM would be incorporated into the plan, and BOEM and/or BSEE will monitor compliance with these measures.	Finfish, marine mammals, sea turtles	BOEM, BSEE, and NMFS

Mitigation Number	Proposed Project Phase	Mitigation or Monitoring Measure	Description	Resource Area Mitigated	BOEM's Identification of the Anticipated Enforcing Agency[3]
6	Construction and installation	Pile driving monitoring plan	BOEM would ensure that Revolution Wind prepare and submit a *Pile Driving Monitoring Plan* to NMFS and BSEE (at OSWsubmittals@bsee.gov) for review and concurrence at least 90 days before start of pile driving.	Marine mammals, Sea turtles	BOEM, BSEE, and NMFS
7	Construction and installation	PSO coverage	BOEM, BSEE, and USACE would ensure that PSO coverage is sufficient to reliably detect marine mammals 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 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 would be deployed. Determinations prior to construction would be based on review of the *Pile Driving Monitoring Plan*. Determinations during construction would be based on review of the weekly pile driving reports and other information, as appropriate.	Marine mammals, Sea turtles	BOEM, BSEE, and USACE
8	Construction and installation	Sound field verification	BOEM, BSEE, and USACE would 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 would be deployed on additional platforms for every 1,500 m that a clearance or shutdown zone is expanded beyond the distances modeled prior to verification. To validate the estimated sound field, sound field verification measurements will be conducted during pile driving of the first three monopiles installed over the course of the Project, with noise attenuation activated. A Sound Field Verification Plan will be submitted to NMFS, BOEM, and BSEE for review and approval at least 90 days prior to planned start of pile driving. This plan will describe how Revolution Wind will ensure that the first three monopile installation sites selected for sound field are representative of the rest of the monopile installation sites and, in the case that they are not, how additional sites will be selected for sound field verification. This plan will also include methodology for collecting, analyzing, and preparing SFV data for submission to NMFS. The plan will describe how the effectiveness of the sound attenuation methodology will be evaluated based on the results. In the event that Revolution Wind obtains technical information that indicates a subsequent monopile is likely to produce larger sound fields, SFV will be conducted for those subsequent monopiles.	Marine mammals, Sea turtles, Finfish, Benthic Habitat, EFH, Invertebrates	BOEM, BSEE, and NMFS
9	Construction and installation	Shutdown zones and clearance zone adjustment	BOEM, BSEE, and NMFS may consider adjustments in the pre-start clearance and/or shutdown zones based on the initial sound field verification (SFV) measurements. Revolution Wind will provide the initial results of the SFV measurements to NMFS in an interim report after each monopile installation for the first three piles as soon as they are available but no later than 48 hours after each installation. Revolution Wind will conduct a SFV to empirically determine the distances to the isopleths corresponding to Level A harassment and Level B harassment thresholds, including at the locations corresponding to the modeled distances to the Level A harassment and Level B harassment thresholds. If initial SFV measurements indicate distances to the isopleths are less than the distances predicted by modeling assuming 10 dB attenuation, Revolution Wind may request a modification of the clearance and shutdown zones for impact pile driving. For a modification request to be considered by NMFS, Revolution Wind must have conducted SFV on at least three piles to verify that zone sizes are consistently smaller than predicted by modeling. If initial SFV measurements indicate distances to the isopleths are greater than the distances predicted by modeling, Revolution Wind will implement additional sound attenuation measures prior to conducting additional pile driving. Additional measures may include improving the efficacy of the implemented noise attenuation technology and/or modifying the piling schedule to reduce the sound source. If modeled zones cannot be achieved by these corrective actions, Revolution Wind will install an additional noise mitigation system to achieve the modelled ranges. Each sequential modification will be evaluated empirically by SFV. Additionally, in the event that SFV measurements continue to indicate distances to isopleths corresponding to Level A harassment and Level B harassment thresholds are consistently greater than the distances predicted by modeling, NMFS may expand the relevant clearance and shutdown zones and associated monitoring measures.	Marine mammals, Sea turtles	BOEM, BSEE, and NMFS

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10	Construction and installation	Monitoring zone for sea turtles	BOEM, BSEE, and USACE would ensure that Revolution Wind monitors the full extent of the area where noise would exceed the 175 dB re 1 μPa^2 threshold for sea turtles for the full duration of all pile driving activities and for 30 minutes following the cessation of pile driving activities and record all observations in order to ensure that all take that occurs is documented.	Sea turtles	BOEM, BSEE, and USACE
11	Construction and installation, O&M, and conceptual decommissioning	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, Revolution Wind must report the sighting information to NMFS as soon as feasible and no later than within 24 hours after conclusion of the detection event (the time, location, and number of animals) via the WhaleAlert app (http://www.whalealert.org/); NMFS Right Whale Sighting Advisory System hotline (phone); and PR.ITP.MonitoringReports@noaa.gov.	Marine mammals	BOEM and NMFS
12	Construction and installation, O&M, and decommissioning	Vessel strike avoidance measures for sea turtles	Between June 1 and November 30, Revolution Wind would have a trained lookout posted on all vessel transits during all phases of the Project to observe for sea turtles. The trained lookout would communicate any sightings, in real time, to the captain so that the requirements in (e) below can be implemented. a. The trained lookout would 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 would maintain a vigilant watch and monitor a Vessel Strike Avoidance Zone (500 m) at all times to maintain minimum separation distances from ESA-listed species. Alternative monitoring technology (e.g., night vision, thermal cameras, etc.) would 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 would be their designated role and primary responsibility while the vessel is transiting. Any designated crew lookouts would 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 100 m or less of the operating vessel's forward path, the vessel operator would slow down to 4 knots (unless unsafe to do so) and then proceed away from the turtle at a speed of 4 knots or less until there is a separation distance of at least 100 m at which time the vessel may resume normal operations. If a sea turtle is sighted within 50 m of the forward path of the operating vessel, the vessel operator would shift to neutral when safe to do so and then proceed away from the turtle at a speed of 4 knots. The vessel may resume normal operations once it has passed the turtle. d. Vessel captains/operators would 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 would slow to 4 knots while transiting through such areas. e. All vessel crew members would be briefed in the identification of ESA-listed species of sea turtles and in regulations and best practices for avoiding vessel collisions. Reference materials would 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) would 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. g. If a vessel is carrying a PSO or trained lookout for the purposes of maintaining watch for North Atlantic right whales, an additional lookout is not required and this PSO or trained lookout must maintain watch for whales, giant manta rays, and sea turtles.	Sea turtles	BOEM, BSEE, and USACE

Mitigation Number	Proposed Project Phase	Mitigation or Monitoring Measure	Description	Resource Area Mitigated	BOEM's Identification of the Anticipated Enforcing Agency[3]
13	Construction and installation, post-construction and installation monitoring	Sampling gear	All sampling gear would be hauled out at least once every 30 days, and all gear would be removed from the water and stored on land between survey seasons to minimize risk of entanglement.	Finfish, marine mammals, sea turtles	BOEM and BSEE
14	Construction and installation, post-construction and installation monitoring	Lost survey gear	If any survey gear is lost, all reasonable efforts that do not compromise human safety would be undertaken to recover the gear. All lost gear would be reported to NMFS (nmfs.gar.incidental-take@noaa.gov) and BSEE (OSWIncidentReporting@bsee.gov) within 24 hours of the documented time of missing or lost gear. This report would include information on any markings on the gear and any efforts undertaken or planned to recover the gear.	Finfish, marine mammals, sea turtles	BOEM, BSEE, and NMFS
15	Construction and installation, post-construction and installation monitoring	Training	At least one of the survey staff onboard the trawl surveys and ventless trap surveys would have completed NEFOP observer 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 would be available on board each survey vessel. BOEM and BSEE would ensure that Revolution Wind prepares a training plan that addresses how this requirement would be met and that the plan is 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	BOEM, BSEE, and NMFS
16	Construction and installation, post-construction and installation monitoring	Sea turtle disentanglement	Vessels deploying fixed gear (e.g., pots/traps) would have adequate disentanglement equipment (i.e., knife and boathook) onboard. Any disentanglement would occur consistent with the Northeast Atlantic Coast STDN Disentanglement Guidelines at 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
17	Construction and installation, post-construction and installation monitoring	Sea turtle/Atlantic sturgeon identification and data collection	Any sea turtles or Atlantic sturgeon caught and/or retrieved in any fisheries survey gear would first be identified to species or species group. Each ESA-listed species caught and/or retrieved would then be properly documented using appropriate equipment and data collection forms. Biological data, samples, and tagging would occur as outlined below. Live, uninjured animals should be returned to the water as quickly as possible after completing the required handling and documentation. a. The Sturgeon and Sea Turtle Take Standard Operating Procedures would be followed (https://media.fisheries.noaa.gov/dammigration/sturgeon_&_sea_turtle_take_sops_external.pdf). b. Survey vessels would 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 be used to scan any captured sea turtles and sturgeon for tags. Any recorded tags would be recorded on the take reporting form (see below). c. Genetic samples would be taken from all captured Atlantic sturgeon (alive or dead) to allow for identification of the DPS of origin of captured individuals and tracking of the amount of incidental take. This would 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 would be sent to a 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 would be confirmed in writing to NMFS within 60 days of the receipt of this ITS. Results of genetic analysis, including assigned DPS of origin would be submitted to NMFS within 6 months of the sample collection. ii. Subsamples of all fin clips and accompanying metadata forms would be held and submitted to a tissue repository (e.g., the Atlantic Coast Sturgeon Tissue Research Repository) on a	Finfish, Sea turtles	BOEM, BSEE, and NMFS

Mitigation Number	Proposed Project Phase	Mitigation or Monitoring Measure	Description	Resource Area Mitigated	BOEM's Identification of the Anticipated Enforcing Agency[3]
			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). d. All captured sea turtles and Atlantic sturgeon would be documented with required measurements and photographs. The animal's condition and any marks or injuries would be described. This information would be entered as part of the record for each incidental take. A NMFS Take Report Form would be filled out for each individual sturgeon and sea turtle (download at: https://media.fisheries.noaa.gov/2021-41507/Take%20Report%20Form%20 07162021.pdf?null) and submitted to NMFS as described below.		
18	Construction and installation, post-construction and installation monitoring	Sea turtle/Atlantic sturgeon handling and resuscitation guidelines	Any sea turtles or Atlantic sturgeon caught and retrieved in gear used in fisheries surveys would 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 would 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 should be minimized (i.e., kept to 15 minutes or less) to limit the amount of stress placed on the animals. b. All survey vessels would 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 would be carried out any time a sea turtle is incidentally captured and brought onboard the vessel during the proposed actions. c. If any sea turtles that appear injured, sick, or distressed, are caught and retrieved in fisheries survey gear, survey staff would 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), the USCG should 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 would 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 would be retained on board the survey vessel for transfer to an appropriately permitted partner or facility on shore as safe to do so. f. Any live sea turtles or Atlantic sturgeon caught and retrieved in gear used in any fisheries survey would ultimately be released according to established protocols and whenever at-sea conditions are safe for those releasing the animal(s) to do so.	Finfish, Sea turtles	BOEM, BSEE, and NMFS
19	Construction and installation, post-construction and installation monitoring	Take notification	GARFO PRD would be notified as soon as possible of all observed takes of sea turtles, and Atlantic sturgeon occurring as a result of any fisheries survey. Specifically: a. GARFO PRD would be notified within 24 hours of any interaction with a sea turtle or sturgeon (nmfs.gar.incidental- take@noaa.gov and BSEE at protectedspecies@bsee.gov). The report would 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)	Finfish, Sea turtles	BOEM, BSEE, and NMFS

Mitigation Number	Proposed Project Phase	Mitigation or Monitoring Measure	Description	Resource Area Mitigated	BOEM's Identification of the Anticipated Enforcing Agency[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 would transmit a copy of the NMFS Take Report Form (download at: https://media.fisheries.noaa.gov/2021-07/Take%20Report%20Form%20 07162021.pdf?null) 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 would be submitted as soon as possible; late reports would be submitted with an explanation for the delay. b. At the end of each survey season, a report would be sent to NMFS that compiles all information on any observations and interactions with ESA-listed species. This report would 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 would be comprehensive of all activities, regardless of whether ESA-listed species were observed.		
20	Construction and installation, O&M, and decommissioning	Monthly/ annual reporting requirements	BOEM and BSEE would ensure that Revolution Wind submits regular reports (in consultation with NMFS) necessary to document the amount or extent of take that occurs during all phases of the proposed action. Details of reporting would be coordinated between Revolution Wind, NMFS, BOEM and BSEE. All reports would be sent to: nmfs.gar.incidental- take@noaa.gov and BSEE at OSWsubmittals@bsee.gov.	Finfish, marine mammals, sea turtles	BOEM, BSEE, and NMFS
21	Construction and installation, O&M, and decommissioning	Vessel strike avoidance plan measures	BOEM will require Revolution Wind to comply with measures and reporting outlined in the final Vessel Strike Avoidance Plan per the MMPA ITR LOA.	Marine mammals	BOEM, BSEE, and NMFS
BOEM-proposed Measures from the Data Collection and Site Survey Activities for Renewable Energy on the Atlantic OCS BA					
1	Construction and installation, O&M, and decommissioning	Data collection BA BMPs	BOEM and BSEE would ensure that all Project Design Criteria and Best Management Practices incorporated in the Atlantic Data Collection consultation for Offshore Wind Activities (June 2021) shall be applied to activities associated with the construction, maintenance and operations of the Revolution Wind Project as applicable.	Finfish, marine mammals, sea turtles	BOEM and BSEE
NMFS-proposed Measures to Minimize Impacts on Benthic Habitat					
1	Construction and installation	Scour and cable protection	BOEM should require scour and cable protection within complex habitats of the Lease Area to use natural, rounded stone of consistent grain size to match existing conditions. Scour and cable protection placed within soft-sediment habitats should incorporate natural, rounded cobble and boulders that does not inhibit epibenthic growth and provides three- dimensional complexity, both in height and in interstitial spaces, as technically and economically feasible. Concrete mattresses should not be permitted to be used as scour protection within hard bottom and structurally complex habitats, and any required use of concrete mattresses for cable protection should be mitigated through the addition of natural, rounded stone. Should the use of any engineered stone be necessary, it should be designed and selected to provide three-dimensional structural complexity that creates a diversity of crevice sizes. BOEM should require that the applicant provide descriptions and specifications for any proposed engineered stone for agency comment and review prior to final design selection.	Benthic habitat	BOEM and BSEE
Other Agency-proposed Mitigation Measures					

Mitigation Number	Proposed Project Phase	Mitigation or Monitoring Measure	Description	Resource Area Mitigated	BOEM's Identification of the Anticipated Enforcing Agency[3]
4	Construction and installation	Recreational fishing	BOEM and BSEE would ensure that Revolution Wind develops a construction schedule that minimizes overlap with recreational fishing tournaments and other important seasonal recreational fishing events.	Recreation and tourism	BOEM and BSEE
5	Construction, O&M	Vessel speed restriction	All vessels, regardless of size, would comply with a 10-knot speed restriction in any Seasonal Management Area (SMA), Dynamic Management Area (DMA), or Slow Zone.	Marine mammals, Sea turtles	BOEM and BSEE
6	Construction and installation	Safety zone during cable installation	BOEM and BSEE would ensure that Revolution Wind coordinates with the U.S. Coast Guard in advance of export cable installation to develop a navigation safety plan, which may include: establishing a safety zone around the cable laying vessel(s); monitoring plan; mitigation plan; schedule; private aids to navigation; and, local notice to mariners.	Navigation and vessel traffic	BOEM and BSEE
7	O&M	Post-installation cable monitoring	Revolution Wind must provide BOEM with a cable monitoring report within 45 calendar days following each inter-array and export cable inspection to determine cable location, burial depths, state of the cable, and site conditions. An inspection of the inter-array cable and export cable is expected to include HRG methods, such as a multi-beam bathymetric survey equipment, and identify seabed features, natural and man-made hazards, and site conditions along federal sections of the cable routing. In federal waters, the initial inter-array and export cable inspection would be carried out within 6 months of commissioning and subsequent inspections would be carried out at years 1, 2, and every 3 thereafter and after a major storm event. Major storm events are defined as when metocean conditions at the facility meet or exceed the 1 in 50-year return period calculated in the metocean design basis, to be submitted to BOEM with the Facility Design Report (FDR). If conditions warrant adjustment to the frequency of inspections following the Year 2 survey, a revised monitoring plan may be provided to BOEM for review. In addition to inspection, the export cable would be monitored continuously with the as-built Distributed Temperature Sensing System. If Distributed Temperature Sensing data indicate that burial conditions have deteriorated or changed significantly and remedial actions are warranted, the Distributed Temperature Sensing data, a seabed stability analysis, and report of remedial actions taken or scheduled must be provided to BOEM within 45 calendar days of the observations. The Distributed Temperature Sensing data, cable monitoring survey data, and cable conditions analysis for each year must be provided to BOEM as part of the Annual Compliance Reports, required by 30 CFR § 585.633(b).	Benthic habitat, EFH, invertebrates, finfish, and commercial fisheries and for-hire recreational fishing	BOEM and BSEE
8	Construction, O&M, decommissioning	Submarine cable system burial plan	A copy of the submarine cable system burial plan shall be submitted by Revolution Wind as part of their Facility Design Report and Fabrication and Installation Report that depicts precise planned locations and burial depths of the entire cable system.	Navigation and vessel traffic	BOEM and BSEE
9	Construction	Boulder relocation reporting	The locations of any boulder (which would protrude >2 m or more on the sea floor) relocated during cable installation activities must be reported to BOEM, USCG, NOAA, and the local harbormaster.	Navigation and vessel traffic	BOEM and BSEE
10	Construction, O&M, decommissioning	Vessel safety practices	All Project vessels involved in construction, operations, maintenance, and decommissioning activities would comply with U.S. or international Safety of Life as Sea (SOLAS) standards, as applicable, with regards to vessel construction, vessel safety equipment, and crewing practices.	Navigation and vessel traffic	BOEM and BSEE
11	Construction, O&M, decommissioning	WTG shut-down mechanism	Equip all WTG rotors (blade assemblies) with control mechanisms to enable remote shut down of requested WTGs by the USCG. A formal shut-down procedure would be part of the standard operating procedures and periodically tested. Normally, USCG-ordered shut downs would be limited to those WTGs in the immediate vicinity of an emergency and for as short a period as is safely practicable under the circumstances, as determined by the USCG.	Other uses – military and national security	BOEM and BSEE
12	Construction, O&M, decommissioning	Adherence to federal survey mitigation guidance	BOEM is committed to working with NOAA Fisheries toward a long-term regional solution to account for changes in survey methodologies because of offshore wind farms. NOAA Fisheries and BOEM recently published (March 22, 2022) a draft Federal Survey Mitigation Implementation Strategy for the Northeast U.S. Region to address anticipated impacts of offshore wind energy development on NOAA Fisheries' scientific	Other uses – scientific research and surveys	BOEM, BSEE, and NMFS

Mitigation Number	Proposed Project Phase	Mitigation or Monitoring Measure	Description	Resource Area Mitigated	BOEM's Identification of the Anticipated Enforcing Agency[3]
			surveys. Activities described in the implementation strategy are designed to mitigate the effect of offshore wind energy development on NOAA Fisheries surveys and is referred to as the Federal Survey Mitigation Program. The mitigation program will include survey-specific mitigation plans for each affected survey including both vessel and aerial surveys. The implementation strategy is intended to guide the implementation of the mitigation program through the duration of wind energy development in the Northeast U.S. region and Revolution Wind will adhere to the measures suggested to the extent practicable. The measures from the published implementation strategy will be analyzed in the Final EIS.		
13	Construction, O&M	Environmental data sharing with federally recognized tribes	No later than ninety (90) days after COP approval, Revolution Wind must, at a minimum, contact the federally recognized tribes currently participating in government-to-government consultations with BOEM for the Project in order to solicit their interest in receiving access to the results of reports generated as a result of the Fisheries Research Monitoring Plan; reporting of all NARW sightings; injured or dead protected species reporting (turtles and NARW); NARW PAM monitoring; PSO reports (e.g., weekly pile driving reports); pile-driving schedule and changes thereto. At a minimum, Revolution Wind should offer access to the following federally recognized tribes: the Mashpee Wampanoag Tribe, the Wampanoag of Gay Head (Aquinnah); the Mashantucket Pequot Indian Tribe; the Narraganset Indian Tribe; and the Delaware Tribe of Indians. Revolution Wind must provide access to non-proprietary/non-confidential business information to the federally recognized tribes no later than 30 days after the information becomes available.	Environmental justice	BOEM
14	Construction and installation, O&M, conceptual decommissioning	Anchoring plan	Given the extent of complex habitats in the Project areas, BOEM should require the applicant to develop an anchoring plan to ensure anchoring is avoided and minimized in complex habitats during construction and maintenance of the Project. This plan should specifically delineate areas of complex habitat around each turbine and cable locations, and identify areas restricted from anchoring. Anchor chains should include mid-line buoys to minimize impacts to benthic habitats from anchor sweep where feasible. The habitat maps and inshore maps delineating eelgrass habitat adjacent to the O&M facility should be provided to all cable construction and support vessels to ensure no anchoring of vessels be done within or immediately adjacent to these complex habitats. The anchoring plan should be provided for our review and comment prior to BOEM approval.	Benthic habitat, EFH, invertebrates, and finfish	BOEM and BSEE

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