APPENDIX I

Other Impacts

Contents

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Unavoidable Adverse Impacts of the Proposed Action

Table I-1 summarizes unavoidable adverse impacts for each resource analyzed in the Revolution Wind Farm and Revolution Wind Export Cable Project (the Project) environmental impact statement (EIS). These impacts are subject to applicable environmental protection measures (EPMs) (see Table F-1 in Appendix F). Table I-1 does not include potential additional mitigation measures that could avoid or further minimize or mitigate Project impacts. Please see the individual resource discussions in Chapter 3 for detailed analyses.

Table I-1. Potential Unavoidable Adverse Impacts of the Action Alternatives by Resource

Resource Area	Potential Unavoidable Adverse Impacts of the Action Alternatives
Air quality	• Impacts from emissions from engines associated with vessel traffic, construction activities, equipment operation, and decommissioning activities
Bats	• Displacement and avoidance behavior due to habitat loss and alteration, equipment noise, and vessel traffic • Individual mortality due to collisions with operating wind turbine generator (WTGs)
Benthic habitat and invertebrates	• Increase in suspended sediments and resulting effects due to seafloor disturbance • Habitat quality impacts, including reduction in habitat as a result of seafloor surface alterations • Displacement, disturbance, and avoidance behavior due to habitat loss and alteration, equipment noise, vessel traffic, increased turbidity, sediment deposition, and electromagnetic fields (EMFs) • Individual mortality due to construction and installation, operations and maintenance (O&M), and decommissioning • Conversion of soft-bottom habitat to new hard-bottom habitat
Birds	• Displacement and avoidance behavior due to habitat loss and alteration, lighting, equipment noise, and vessel traffic • Individual mortality due to collisions with operating WTGs
Coastal habitats and fauna	• Displacement and avoidance behavior from habitat loss and alteration and equipment noise • Individual mortality from collisions with vehicles or construction equipment • Short-term habitat alteration and increased invasive species risk
Commercial fisheries and for-hire recreational fishing	• Disruption to access or temporary restriction in port access or harvesting activities due to construction of offshore Project elements • Disruption to harvesting activities during operations of offshore wind facility • Changes in vessel transit and fishing patterns • Changes in risk of gear entanglement or target species
Cultural resources	• Impacts to unidentified or undefined submerged marine resources from Project construction and installation, O&M, and decommissioning Impacts to terrestrial cultural resources and the viewshed from Project construction and installation and O&M • Visual impacts to onshore cultural resources

Resource Area	Potential Unavoidable Adverse Impacts of the Action Alternatives
Demographics, employment, and economics	• Disruption of commercial fishing, for-hire recreational fishing, and marine recreational businesses during offshore construction and cable installation • Hindrances to ocean economy sectors due to the presence of the offshore wind facility, including commercial fishing, recreational fishing, sailing, sightseeing, and supporting businesses
Environmental justice	• Changes to air quality, water quality, land use and coastal infrastructure, and commercial fisheries and for-hire recreational fishing that are disproportionately borne by minority or low-income populations from Project construction and installation, O&M, and decommissioning
Finfish and essential fish habitat	• Increase in suspended sediments and resulting effects due to seafloor disturbance • Habitat quality impacts, including a reduction in habitat as a result of seafloor surface alterations • Displacement, disturbance, and avoidance behavior due to habitat loss and alteration, equipment noise, vessel traffic, increased turbidity, sediment deposition, and EMFs • Individual mortality due to construction and installation, O&M, and decommissioning • Conversion of soft-bottom habitat to new hard-bottom habitat (for some species)
Land use and coastal infrastructure	• Land use disturbance due to construction as well as effects due to noise, vibration, and travel delays
Marine mammals	• Displacement, disturbance, and avoidance behavior due to habitat loss and alteration, equipment noise, vessel traffic, increased turbidity, and sediment deposition during construction and installation and O&M • Temporary loss of current ambient acoustic habitat and increased potential for vessel strikes
Navigation and vessel traffic	• Changes in vessel transit patterns • Increased navigational complexity and allision risk within the offshore wind farm area
Other marine uses	• Changes in access to marine mineral resource, and cable placement • Disruption of scientific surveys, radar systems, military, and aviation traffic
Recreation and tourism	• Disruption of coastal recreation activities during onshore construction, such as beach access • Viewshed effects from the WTGs altering enjoyment of marine and coastal recreation and tourism activities • Disruption to access or temporary restriction of in-water recreational activities from construction of offshore Project elements • Hindrances to some types of recreational fishing from the WTGs during operation
Sea turtles	• Disturbance, displacement, and avoidance behavior due to habitat loss and alteration, equipment noise, vessel traffic, increased turbidity, sediment deposition, and EMFs
Visual resources	• Change in scenic quality of landscape and seascape
Water quality	• Increase in erosion, turbidity and sediment resuspension, and inadvertent spills during construction and installation, O&M, and decommissioning
Wetlands and non-tidal waters	• Increase in soil erosion, sedimentation, and discharges and releases from land disturbance during construction and installation, O&M, and decommissioning

Irreversible and Irretrievable Commitment of Resources

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time, such as the short-term loss of timber productivity in forested areas that are kept clear for a power line or a road. Table I-2 summarizes irreversible or irretrievable impacts for each resource analyzed in the EIS, subject to applicable EPMs. Table I-2 does not include potential additional mitigation measures that could avoid or further minimize or mitigate Project impacts. Chapter 3 provides a detailed discussion of effects associated with the Project.

Table I-2. Irreversible and Irretrievable Commitment of Resources by Resource Area for the Proposed Action

Resource Area	Irreversible Impacts	Irretrievable Impacts	Explanation
Air quality	No	No	The Bureau of Ocean Energy Management (BOEM) expects air emissions to be in compliance with permits regulating air quality standards, and emissions would be temporary during construction activities. If the Proposed Action displaces fossil fuel energy generation, overall improvement of air quality would be expected.
Bats	No	No	Irreversible impacts on bats could occur if one or more individuals were injured or killed; however, implementation of mitigation measures developed in consultation with the U.S. Fish and Wildlife Service (USFWS) would reduce or eliminate the potential for such impacts. Decommissioning of the Project would reverse the impacts of bat displacement from foraging habitat.
Benthic habitat and invertebrates	No	No	Although local mortality could occur, BOEM does not anticipate population-level impacts. The Project could alter habitat during construction and operations but could restore the habitat after decommissioning.
Birds	No	No	Irreversible impacts on birds could occur if one or more individuals were injured or killed; however, implementation of mitigation measures developed in consultation with the USFWS would reduce or eliminate the potential for such impacts. Decommissioning of the Project would reverse the impacts of bird displacement from foraging habitat.
Coastal habitats and fauna	No	No	Although local mortality could occur, BOEM does not anticipate population-level impacts on other coastal habitats or fauna. The Project could alter habitat during construction and operations but could restore the habitat after decommissioning.

Resource Area	Irreversible Impacts	Irretrievable Impacts	Explanation
Commercial fisheries and for-hire recreational fishing	No	Yes	Based on the anticipated duration of construction and installation and O&M, BOEM does not anticipate impacts on commercial fisheries to be irreversible. The Project could alter habitat during construction and operations, limit access to fishing areas during construction, or reduce vessel maneuverability during operations. However, decommissioning of the Project would reverse those impacts. Irretrievable impacts (lost revenue) could occur due to the loss of use of fishing areas at an individual level.
Cultural resources	Yes	Yes	Although unlikely, unanticipated removal or disturbance of previously unidentified cultural resources onshore and offshore could result in irreversible or irretrievable impacts.
Demographics, employment, and economics	No	No	Based on the anticipated duration of construction and installation and O&M, BOEM does not anticipate that contractor needs, housing needs, and supply requirements would lead to an irretrievable loss of workers for other projects or increase housing and supply costs.
Environmental justice	No	No	Potential environmental justice impacts, if any, would be short term and localized.
Finfish and essential fish habitat	No	No	Although local mortality could occur, BOEM does not anticipate population-level impacts. The Project could alter habitat during construction and operations but could restore the habitat after decommissioning.
Land use and coastal infrastructure	Yes	Yes	Land use required for construction and operations activities, such as the land proposed for the interconnection facility, could result in a minor irreversible impact. Construction activities could result in a minor irretrievable impact due to the temporary loss of use of the land for otherwise typical activities. Onshore facilities may or may not be decommissioned.
Marine mammals	No	Yes	Irreversible impacts on marine mammals could occur if one or more individuals of species listed under the Endangered Species Act (ESA) were injured or killed; however, NMFS consultation mitigation measures would reduce or eliminate the potential for such impacts on listed species. Irretrievable impacts could occur if individuals or populations grow more slowly as a result of displacement from the Lease Area.
Navigation and vessel traffic	No	Yes	Based on the anticipated duration of construction and installation and O&M, BOEM does not anticipate impacts on vessel traffic to result in irreversible impacts. Irretrievable impacts could occur due to changes in transit routes, which could be less efficient during the life of the Project.
Other marine uses	No	Yes	BOEM does not anticipate the potential impacts to be irreversible; however, disruption of offshore scientific research and surveys would occur during proposed Project construction, operations, and decommissioning activities.

Resource Area	Irreversible Impacts	Irretrievable Impacts	Explanation
Recreation and tourism	No	No	Construction activities near the shore could result in a minor temporary loss of use of the land for recreation and tourism purposes, but these impacts would not be irreversible or irretrievable.
Sea turtles	No	Yes	Irreversible impacts on sea turtles could occur if one or more individuals of species listed under the ESA were injured or killed; however, NMFS consultation mitigation measures would reduce or eliminate the potential for impacts on listed species. Irretrievable impacts could occur if individuals or populations grow more slowly as a result of displacement from the Lease Area.
Visual resources	No	Yes	Viewshed changes would persist for the life of the Project, until decommissioning is complete.
Water quality	No	No	BOEM does not expect activities to cause loss of or major impacts on existing inland waterbodies or wetlands. Turbidity and other water quality impacts in the marine and coastal environment would be short term, with the rare exception of a major spill.
Wetlands and non-tidal waters	No	No	BOEM does not expect activities to cause loss of or major impacts on existing wetlands or other non-tidal waters.

Relationship between the Short-Term Use of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

The Council on Environmental Quality's National Environmental Policy Act implementing regulations (40 CFR 1502.16) require that an EIS address the relationship between short-term use of the environment and the potential impacts of such use on the maintenance and enhancement of long-term productivity. Such impacts could occur as a result of a reduction in the flexibility to pursue other options in the future, or assignment of a specific area (land or marine) or resource to a certain use that would not allow other marine uses, particularly beneficial uses, to occur at a later date. An important consideration when analyzing such effects is whether the short-term environmental effects of the action would result in detrimental effects to long-term productivity of the affected areas or resources.

As assessed in EIS Chapter 3, BOEM anticipates that most of the potential adverse effects associated with the Proposed Action would occur during construction activities and would be temporary and minor or moderate. Table I-1 and Table I-2 identify unavoidable, irretrievable, or irreversible impacts that would be associated with the Project. However, the Bureau of Ocean Energy Management (BOEM) expects most of the marine and onshore environments to return to normal long-term productivity levels after Project decommissioning. Based on these findings, BOEM also anticipates that the Proposed Action would not result in impacts that would significantly narrow the range of future uses of the environment.

Additionally, the Project would provide the following long-term benefits:

- Promotion of clean and safe development of domestic energy sources and clean energy job creation
- Promotion of renewable energy to help ensure geopolitical security; combat climate change; and provide electricity that is affordable, reliable, safe, secure, and clean
- Delivery of power to the New England region to contribute to Connecticut's and Rhode Island's renewable energy goals
- Increased habitat for certain fish species