MAYFLOWER WIND

Appendix J. Terrestrial Vegetation and Wildlife Assessment Report

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MAYFLOWER WIND

Prepared for:
Mayflower Wind Energy LLC

Final Terrestrial Vegetation and Wildlife Assessment Report

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AECOM Imagine it. Delivered.

Quality Information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	2/14/2021	COP Submittal	Yes	Nancy Palmstrom	Project Manager
1	8/27/2021	Revised to include Brayton Point Onshore Project Area and updated Falmouth Project Design Envelope, and responses to BOEM comments	Yes	Kristen Durocher	Deputy Project Manager
2	10/27/2021	Response to BOEM comments	Yes	Kristen Durocher	Deputy Project Manager
3	2/4/2022	Revisions to Brayton Point Onshore layout: Figure 2-3 Figure 4-5 Figure 4-7 Figure 4-12 Figure 4-14 Figure 4-16 Table 4-2 Page 4-31	Yes	Kristen Durocher	Deputy Project Manager

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Acronyms and Abbreviations

Abbreviation or Acronym	Definition
AIS	Air-Insulated Substation
AIM	Avoidance and Impact Minimization
BCC	Birds of Conservation Concern
BMP	Best Management Practice
BOEM	Bureau of Ocean Energy Management
CFR	Code of Federal Regulations
CMR	Code of Massachusetts Regulations
COP	Construction and Operations Plan
DFW	Division of Fisheries and Wildlife
ECC	export cable corridor
EFSB	Energy Facilities Siting Board
EH	Estimated Habitat
ELF	Extremely Low Frequency
EMF	Electromagnetic Field
ESA	Endangered Species Act
ft	feet
GIS	Geographic Information System
ha	hectare
HDD	Horizontal Directional Drilling
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IISD	International Institute for Sustainable Development
IPaC	Information for Planning and Consultation
IPF	Impact-Producing Factor
JBCC	Joint Base Cape Cod
km	kilometer
kV	kilovolt
Lease Area	Lease Area OCS-A 0521
MADCR	Massachusetts Department of Conservation and Recreation
MARNG	Massachusetts Army National Guard
MassDEP	Massachusetts Department of Environmental Protection
MassGIS	Massachusetts Geographic Information System
Mayflower Wind	Mayflower Wind Energy LLC
MBTA	Migratory Bird Treaty Act
m	Meter
MESA	Massachusetts Endangered Species Act
mi	statute mile

Abbreviation or Acronym	Definition
NHESP	Natural Heritage and Endangered Species Program
NPS	National Park Service
O&M	Operations and Maintenance
OCS	Outer Continental Shelf
OSP(s)	Offshore Substation Platform(s)
PEM	Freshwater emergent
PFO	Freshwater forested
PH	Priority Habitat
POI	Point of Interconnection
PSS	Freshwater scrub-shrub
RIDEM	Rhode Island Department of Environmental Management
RIGIS	Rhode Island Geographic Information System
ROW	Right of Way
SGCN	Species of Greatest Conservation Need
SPCC	Spill Prevention, Control, and Countermeasure
U.S.	United States
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
WTG	Wind Turbine Generator

1.0 Introduction

Mayflower Wind Energy LLC (Mayflower Wind) proposes an offshore wind renewable energy generation project (the Project) located in federal waters off the southern coast of Massachusetts in the Outer Continental Shelf (OCS) Lease Area OCS-A 0521 (Lease Area). The Project will deliver electricity to the regionally administered transmission system via export cables with sea-to-shore transitions in Falmouth and Somerset, Massachusetts and onshore transmission system extending to the anticipated points of interconnection (POIs) in Massachusetts.

1.1 Assessment Objectives

The objective of this Terrestrial Vegetation and Wildlife Assessment Report is to document the existing environment within the Onshore Project Areas, anticipated effects including temporary consequences to the natural environment from construction, operations and maintenance (O&M) and eventual decommissioning activities of the Project as proposed, as well as avoidance and minimization measures that will be taken to mitigate the effects of the Project on the natural environment. For the purposes of this assessment, the Onshore Project Areas[1] include: the export cable landfalls, onshore export cables, the onshore substation, the anticipated POIs for the Project, and onshore facilities for construction and/or operation. The Onshore Project Area includes onshore facilities in Falmouth (Falmouth Onshore Project Area) and Aquidneck Island in Portsmouth, Rhode Island and Brayton Point in Somerset, Massachusetts (Brayton Point Onshore Project Area).

In this assessment report, AECOM identifies Impact-Producing Factors (IPFs) affecting terrestrial vegetation, ecological communities, and wildlife species. Mayflower Wind is committed to minimizing the Project's influence on the natural environment by co-optimizing the use of existing transmission routes and already developed facilities for the Project's transmission cables and necessary infrastructure where practicable.

1.2 Report Organization

This report includes a general Project overview (Section 2.0), a description of the assessment approach (Section 3.0), discussion of the existing specific terrestrial environments and wildlife resources that occur within the Onshore Project Area as well as special protections they may receive (Section 4.0), and a description of how the construction, O&M, and decommissioning of the Project will affect these resources and the steps that are being taken to avoid, minimize or mitigate these effects (Section 5.0). A summary of conclusions is provided in Section 6.0 and references cited in this report are listed in Section 7.0.

[1] The Onshore Project Area is the footprint of each component and airspace above. Also considered are adjacent environments up to 100 feet (ft) (30 meters [m]) on either sides of the footprints that may be affected by construction noise or other temporary construction perturbations and/or other areas that may incur temporary and permanent disturbances. The limits of the Onshore Project Area for this report stops at the high tide line.

2.0 Project Description

2.1 Project Overview

The Mayflower Wind Project includes a Lease Area located in federal waters south of Martha's Vineyard and Nantucket (Figure 2-1). Wind turbine generators (WTGs) constructed within the Lease Area will deliver power via inter-array cables to the offshore substation platforms (OSPs). Submarine offshore export cables will be installed within offshore export cable corridors (ECCs) to carry the electricity from the OSPs within the Lease Area to the onshore transmission systems via two different ECCs. One ECC will make landfall in Falmouth, Massachusetts and the other will make landfall at Brayton Point, in Somerset, Massachusetts. The offshore export cables will make landfall via horizontal directional drilling (HDD). The proposed Falmouth ECC will extend from the Lease Area through Muskeget Channel into Nantucket Sound to three potential landing location(s) in Falmouth including Shore Street, Central Park, or Worcester Avenue. The proposed Brayton Point ECC will run north and west from the Lease Area through Rhode Island Sound to the Sakonnet River. It will then run north up the Sakonnet River, cross land at Aquidneck Island to Mount Hope Bay, and then north into Massachusetts state waters to Brayton Point. Landfall will be made via HDD at one of two potential landing locations in Somerset on the western side of Brayton Point from the Lee River (preferred) or the eastern side via the Taunton River (alternate).

In Falmouth, the underground onshore export cables will extend from the landfall location(s) to an onshore substation and will be installed within existing paved roadways and shoulder and within a municipal grassy median strip for the Worcester Avenue HDD transition vault (Figure 2-2). The new Falmouth onshore substation will step up the voltage to 345 kilovolts (kV) to enable connection to either an overhead transmission line (preferred) or an underground transmission route (alternate). The selected landfall location will determine the route of the underground onshore export cables between the landfall and the new onshore substation. The proposed Falmouth POI to the regional transmission system is an existing switching station (Falmouth Tap). Mayflower Wind anticipates that upgrades to Falmouth Tap will be undertaken by Eversource, as part of a larger reliability project, which is independent of the Mayflower Wind Project. The overhead transmission line will be designed, permitted, and built by Eversource to provide interconnection at Falmouth Tap. The alternate underground transmission route would be constructed within local roadway and/or shoulder extending from the onshore substation to the POI at Falmouth Tap.

As stated above, the Brayton Point ECC includes an overland portion where underground onshore export cables will be installed to cross the northern portion of Aquidneck Island (Figure 2-3). Three route options for the crossing of the island are under consideration, all route options include HDD for entry and exit on/off the island. At Brayton Point, the onshore underground export cables will traverse the site from the landing to the location of a new high voltage direct current (HVDC) converter station (converter station). Underground transmission cable(s) will be constructed from the converter station to the Brayton Point POI, the adjacent existing National Grid substation.

The Falmouth Onshore Project Area includes the landing(s), underground onshore export cables, onshore substation, alternate underground transmission route, and POI at the Falmouth Tap switching station. The Brayton Point Onshore Project Area includes the onshore export cable route options over Aquidneck Island, landing(s) at Aquidneck Island and Brayton Point, the underground onshore export cables, converter station, underground transmission route, and the POI at the National Grid substation. See Figure 2-2 and Figure 2-3 for the Falmouth Onshore Project Area and the Brayton Point Onshore Project Area respectively.

For purposes of this report, many subsections are often segregated by two subsection headings: Falmouth Onshore Project Area and Brayton Point Onshore Project Area. The geographic-specific "Onshore Project Area", when used as a heading, encompasses the disturbance footprint of the Project's components in that geography (i.e., export cable, landing location(s), and onshore locations [preferred and alternates], and POI.) Within the subsection heading, individual components footprints are described separately, when necessary and appropriate.

2.2 Specific Project Details

Each primary onshore Project component is briefly described below in Table 2-1. Additional details may be found in the Construction and Operations Plan (COP) Section 3 – Description of Proposed Activities.

Table 2-1. Key Project Details

Project Attribute	Description
Landfall Location(s)	Falmouth, MA Three locations under consideration: Worcester Avenue (preferred), Shore Street, and Central Park Brayton Point, Somerset, MA Two locations under consideration: the western (preferred) and eastern (alternate) shorelines of Brayton Point Aquidneck Island, RI Several locations under consideration for intermediate landfall across the island
Onshore Export Cables	Falmouth, MA High voltage alternating current (HVAC) (anticipated); Nominal underground onshore export cable voltage: 200 – 345 kV Up to 12 onshore export power cables and up to five communications cables Length: Up to 6.4 statute miles (mi) (10.3 kilometers [km]) Brayton Point, Somerset, MA HVDC; Nominal underground onshore export cable voltage: ±320 kV Up to 4 export power cables and up to 2 communication cables Length: Up to 3,940 feet (ft) (1,200 meters [m]) on Brayton Point Aquidneck Island, RI HVDC; Nominal underground onshore export cable voltage: ±320 kV Up to 4 onshore export power cables and up to 2 communication cables Up to 3 mi (4.8 km) across Aquidneck Island
Onshore Substation/HVDC Converter Station	Falmouth, MA Type: Step up 275-kV to 345-kV; Air-insulated substation (AIS) or gas-insulated substation (GIS) Location: Two locations under consideration: Lawrence Lynch (preferred), and Cape Cod Aggregates (alternate) Area: Up to 26 acres (10.5 hectares [ha]) Brayton Point, Somerset, MA Type: HVDC Converter Station Location: On the Brayton Point property area under consideration Area: Up to 7.5 acres (3.0 ha)
Transmission from Onshore Substation/Converter Station to POI	Falmouth, MA New, 345-kV overhead transmission line along existing utility right of way (ROW) (preferred) (to be designed, permitted, and built by Eversource) Up to 5.1 mi (8.2 km) in length New, 345-kV underground transmission route (alternate) Up to 2.1 mi (3.4 km) in length Brayton Point, Somerset, MA New 345-kV underground transmission route to National Grid substation HVAC; nominal underground transmission cable voltage: up to 345 kV Up to 2,788 ft (850 m) on Brayton Point property
Point of Interconnection	Falmouth, MA Falmouth Tap (new or upgraded switching station to be designed, permitted, and built by Eversource) Brayton Point, Somerset, MA Existing National Grid substation

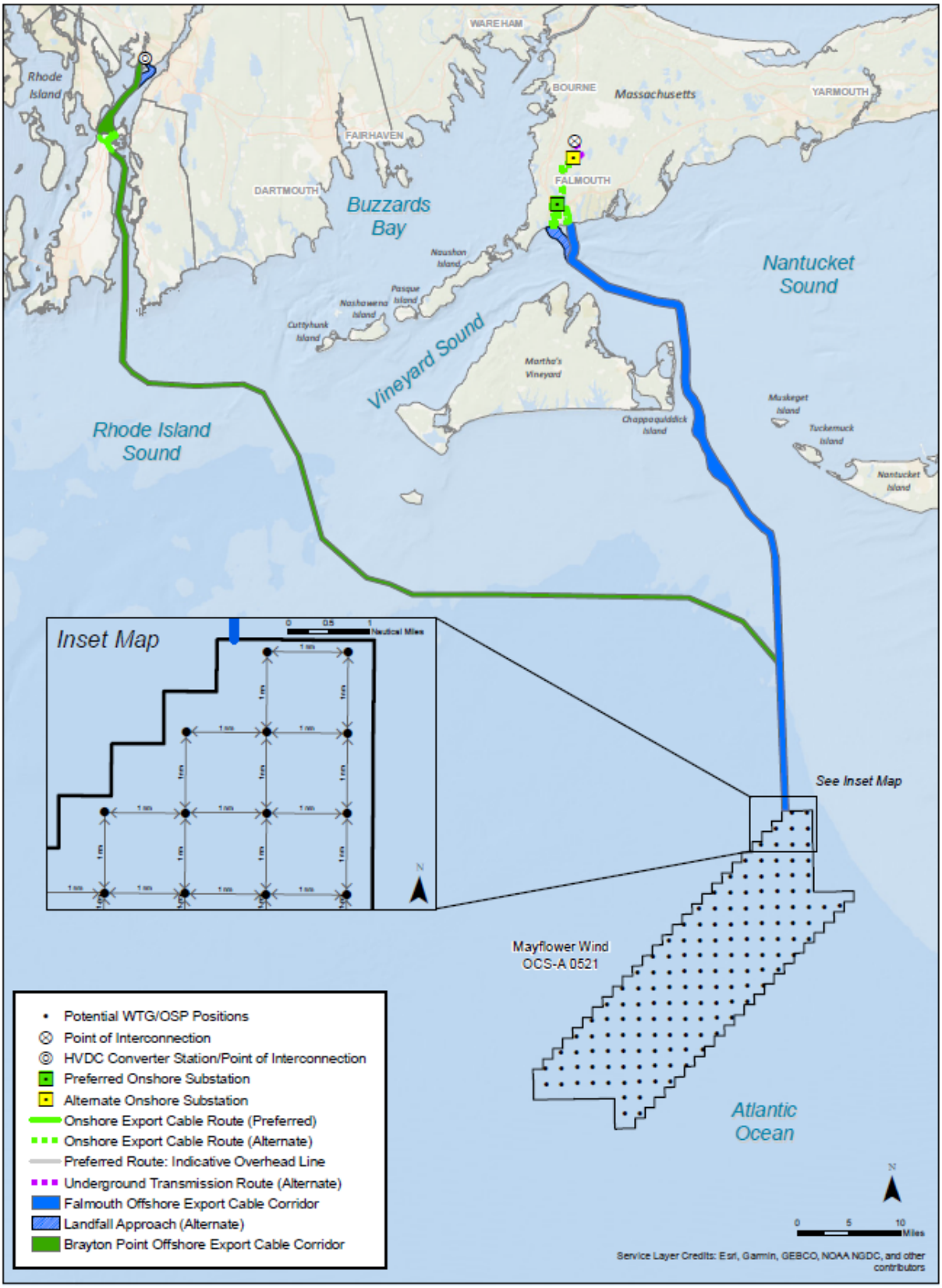


Figure 2-1. Location of Mayflower Wind Offshore Wind Renewable Energy Generation Project

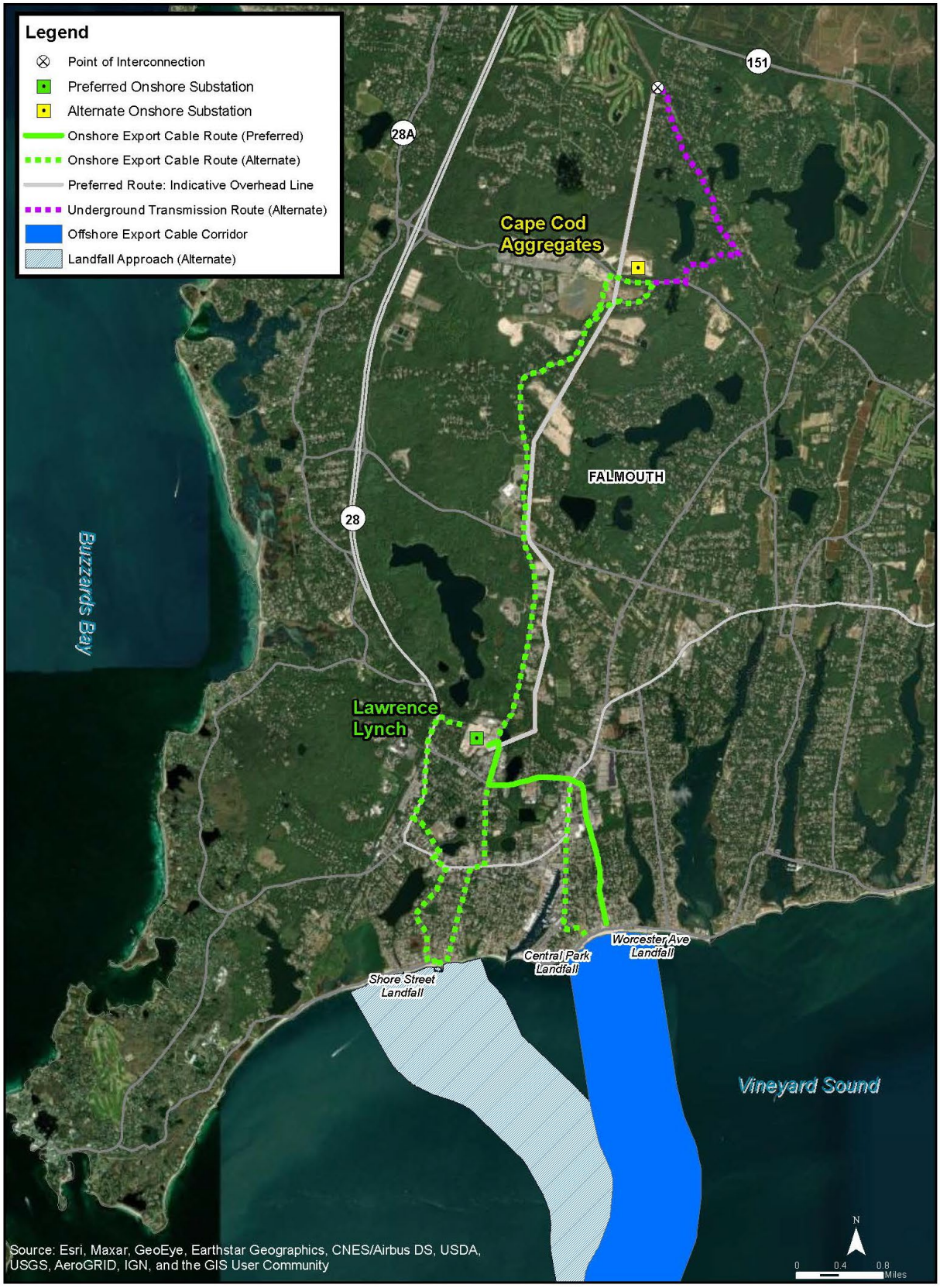


Figure 2-2. Location of Mayflower Wind Landfall and Onshore Project Elements – Falmouth Onshore Project Area

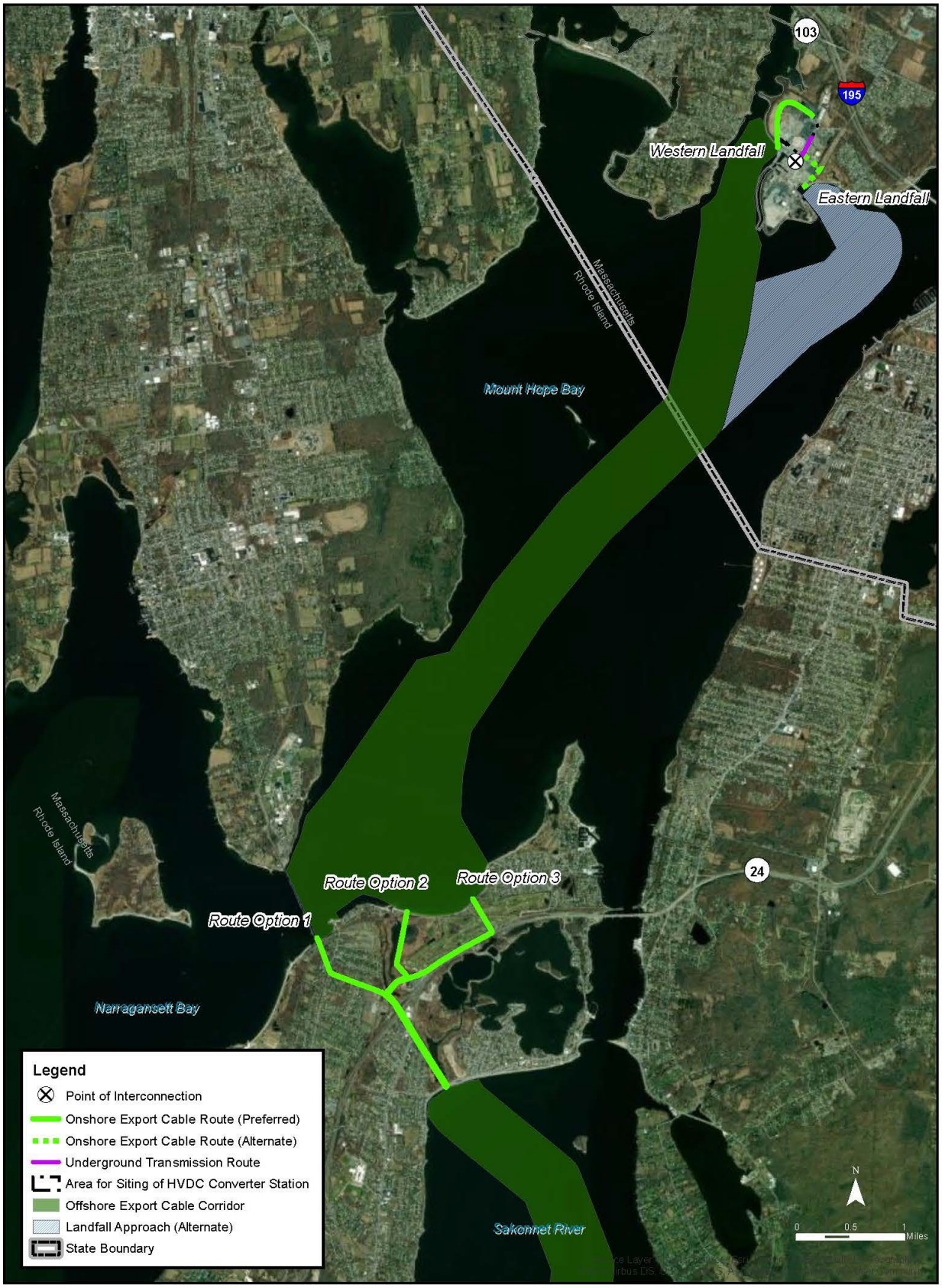


Figure 2-3. Location of Mayflower Wind Landfall and Onshore Project Elements – Brayton Point Onshore Project Area

3.0 Assessment Approach

This assessment first describes the existing natural habitats and vegetation within the Onshore Project Areas and associated wildlife resources that are present and then assesses potential Project-related effects on those resources. The information presented is based on desktop surveys, wetland delineations, and windshield surveys.

A combination of public and private data sources was used for this analysis. These data include the Massachusetts Department of Environmental Protection (MassDEP) Land Use Geographic Information System (GIS) dataset, MassDEP Wetlands GIS data layer, and data layers from the Rhode Island Department of Environmental Management (RIDEM). Also, investigations for Waters of the United States (U.S.) and their adjacent wetlands were performed within the Lawrence Lynch site. Windshield surveys and aerial photo reconnaissance were conducted along roadways in the route of the Falmouth Onshore Project Area to confirm mapped ecological resources. For the Brayton Point Onshore Project Area, aerial photo reconnaissance was the primary method of investigation.

It is anticipated that in order to support future federal, state, and/or local permit applications, detailed field survey(s) will be required to confirm natural community types, wildlife, regulated resource areas, and protected species potentially present or within the Onshore Project Areas.

Project-related effects were considered for three stages of the Project: construction, O&M, and decommissioning.

4.0 Existing Conditions

The following sections describe the existing resources located within the Onshore Project Areas including existing natural communities, wildlife, and protected species.

4.1 Natural Communities and Vegetation

The onshore portions of the Project (both Brayton Point and Falmouth Onshore Project Areas) are designed to use existing infrastructure to the extent practicable, including installation of the Project facilities within existing roads, current or former sand and gravel pits, existing utility ROWs, and other existing infrastructure within the Towns of Falmouth and Somerset, Massachusetts, and Portsmouth, Rhode Island.

Land Use cover types are described in Section 4.1.1. Wetlands are described in Section 4.1.2 and mapped cover types and natural communities at each Project component are described in Section 4.1.2.

4.1.1 Falmouth Onshore Project Area

The natural environment in this area of Upper Cape Cod is classified by the U.S. Environmental Protection Agency (USEPA) as the Atlantic Coastal Pine Barren Level III Ecoregion (Ecoregion code 84), and further classified by the Massachusetts Division of Fisheries and Wildlife as the Cape Cod Coastal Lowlands and Islands Ecoregion (Ecoregion code 221Ab). This ecosystem is characterized by coastal deposits and outwash plains left by receding glaciers. The Falmouth Onshore Project Area is situated along the terminal moraine, or the point of maximum glacial advance, of the Wisconsin glaciation. The soils are predominantly sandy, acidic, and nutrient poor. Vegetation common to this ecoregion includes short or stunted oaks and pines (Swain, 2020).

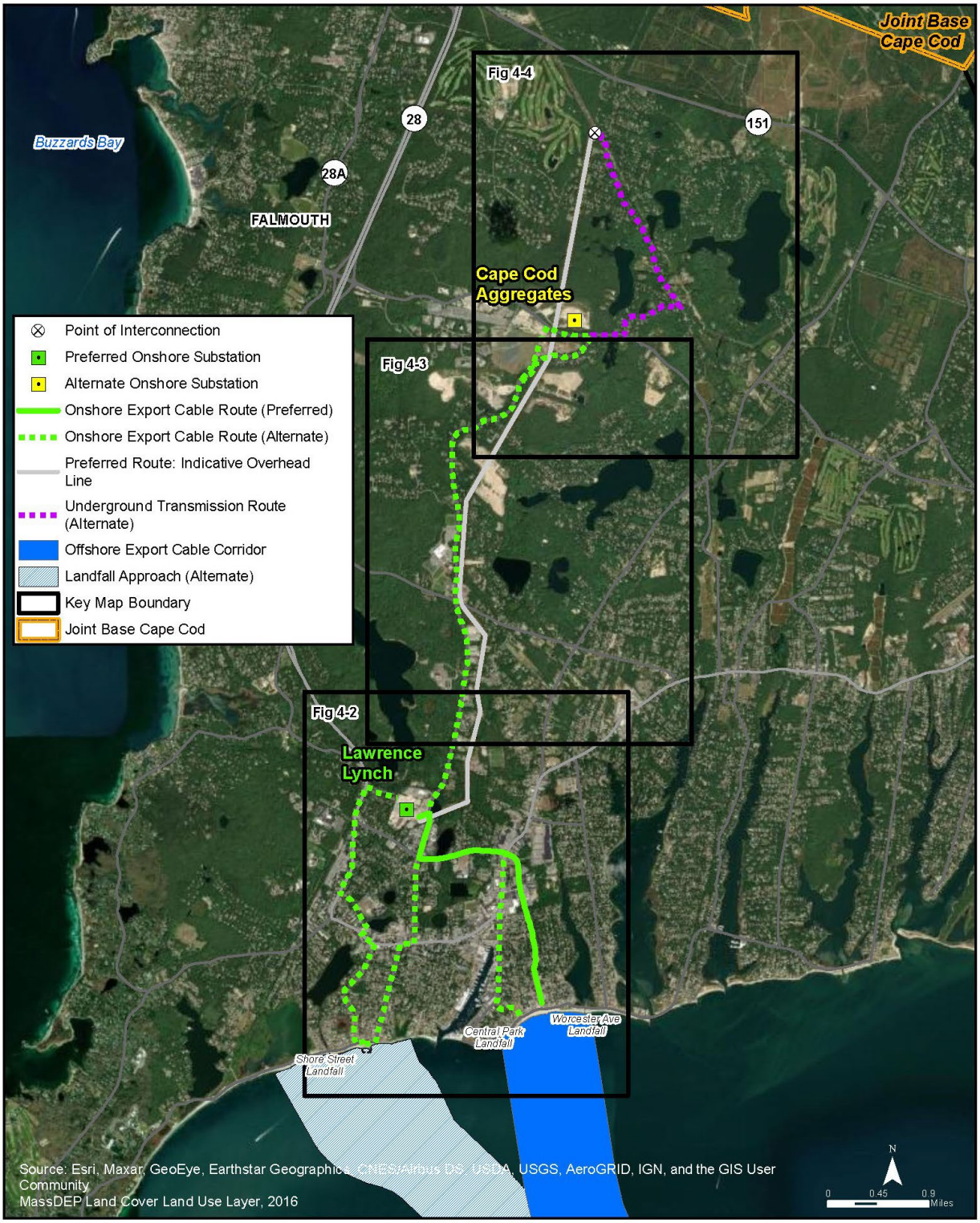
Natural communities are the collections of plant species that commonly live together in a natural setting with a similar physical environment subject to similar physical processes (e.g., temperature, precipitation, geologic, alluvial, and aeolian forces). Natural communities occurring on lands for the Project facilities and in the immediate vicinity were estimated using the Massachusetts Geographical Information System (MassGIS) 2016 Land Use/Land Cover dataset (MassGIS, 2019a). This dataset was used to create Figure 4-1, which displays the natural communities within the Falmouth Onshore Project Area. Figure 4-2 through Figure 4-4 serve as detail maps for the Falmouth Onshore Project Area.

4.1.2 Brayton Point Onshore Project Area

The same mapping data used for Falmouth was used for Brayton Point. For Aquidneck Island in Rhode Island, natural community and vegetation cover type was based on the Rhode Island Geographical Informational System (RIGIS) 2011 Land Use and Land Cover dataset (RIGIS, 2021). These data sets were used to create Figure 4-5, which displays the natural communities within the Brayton Point Onshore Project Area. Figure 4-6 and Figure 4-7 serve as detail maps identifying a variety of land use cover types and natural communities for the Brayton Point Onshore Project Area.

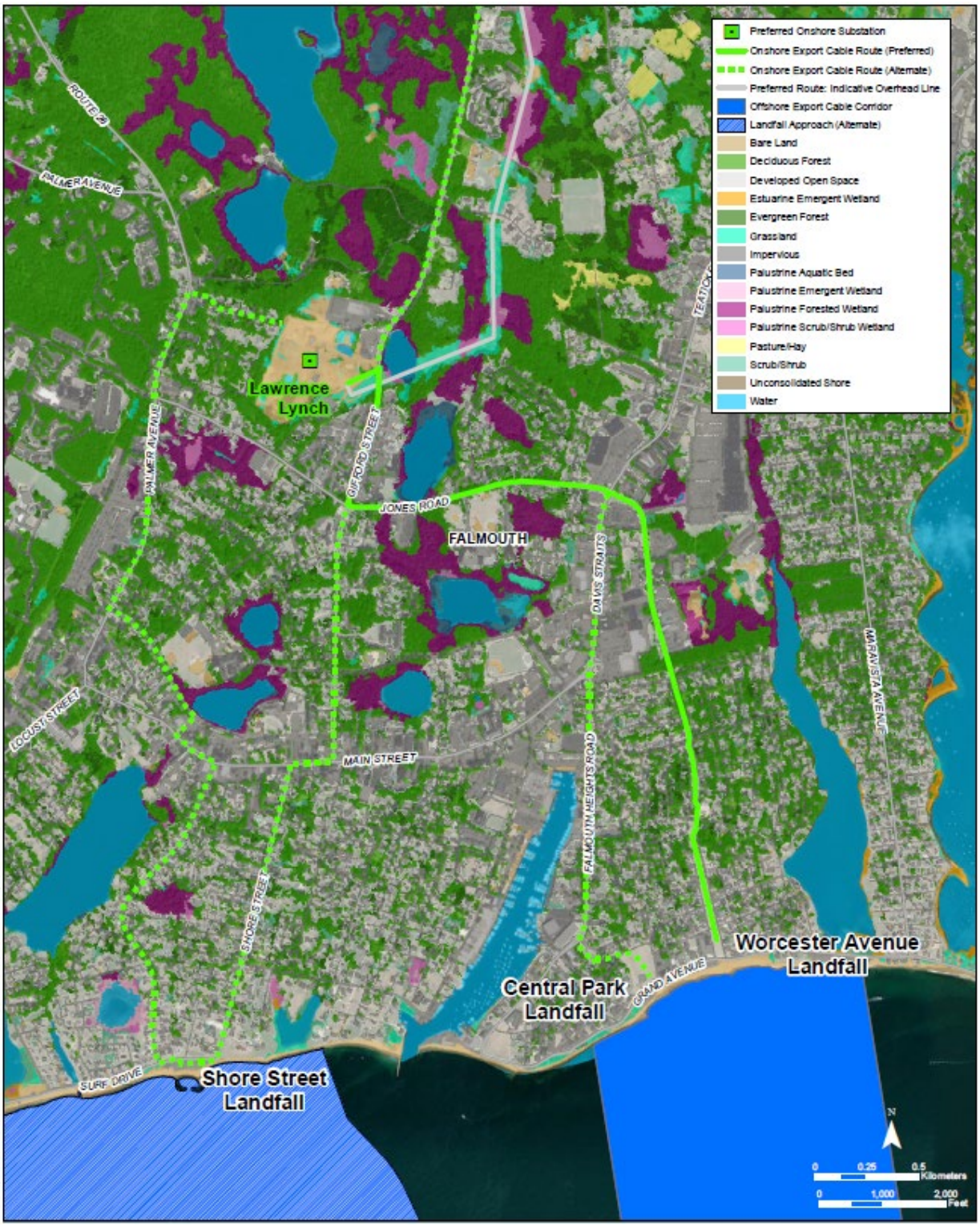
The Brayton Point Onshore Project Area's lands are classified by the USEPA as Ecoregion 59 – Northeastern Coastal Zone. This lowland ecoregion has flat to gently rolling irregular plains with most elevations under 200 feet (61 m). The vegetation is varied, with some of the oak-hickory and oak-pine forests having coastal influences. Land cover is mostly mixed forest with numerous wetlands and small areas of cropland and pasture.

Within the Project footprint of the Brayton Point Onshore Project Area, onshore natural communities are limited. The Project routes often occur within/underneath developed areas, road services and maintained recreational areas (e.g., golf courses).



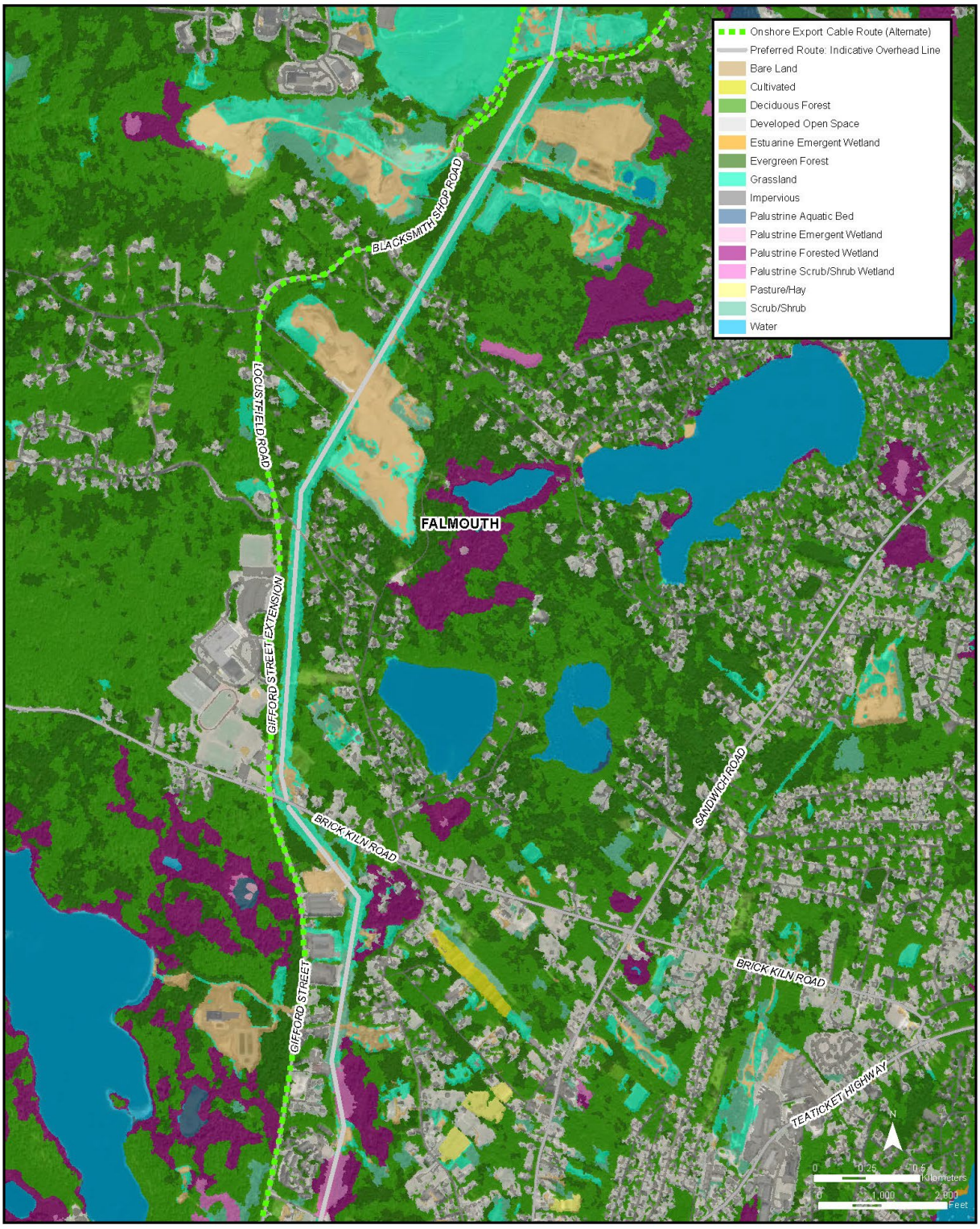
Data source: MassGIS, 2019a

Figure 4-1. Location and Extent of Land Use Cover Types and Natural Communities in the Falmouth Onshore Project Area and Surrounding Landscape – Overview



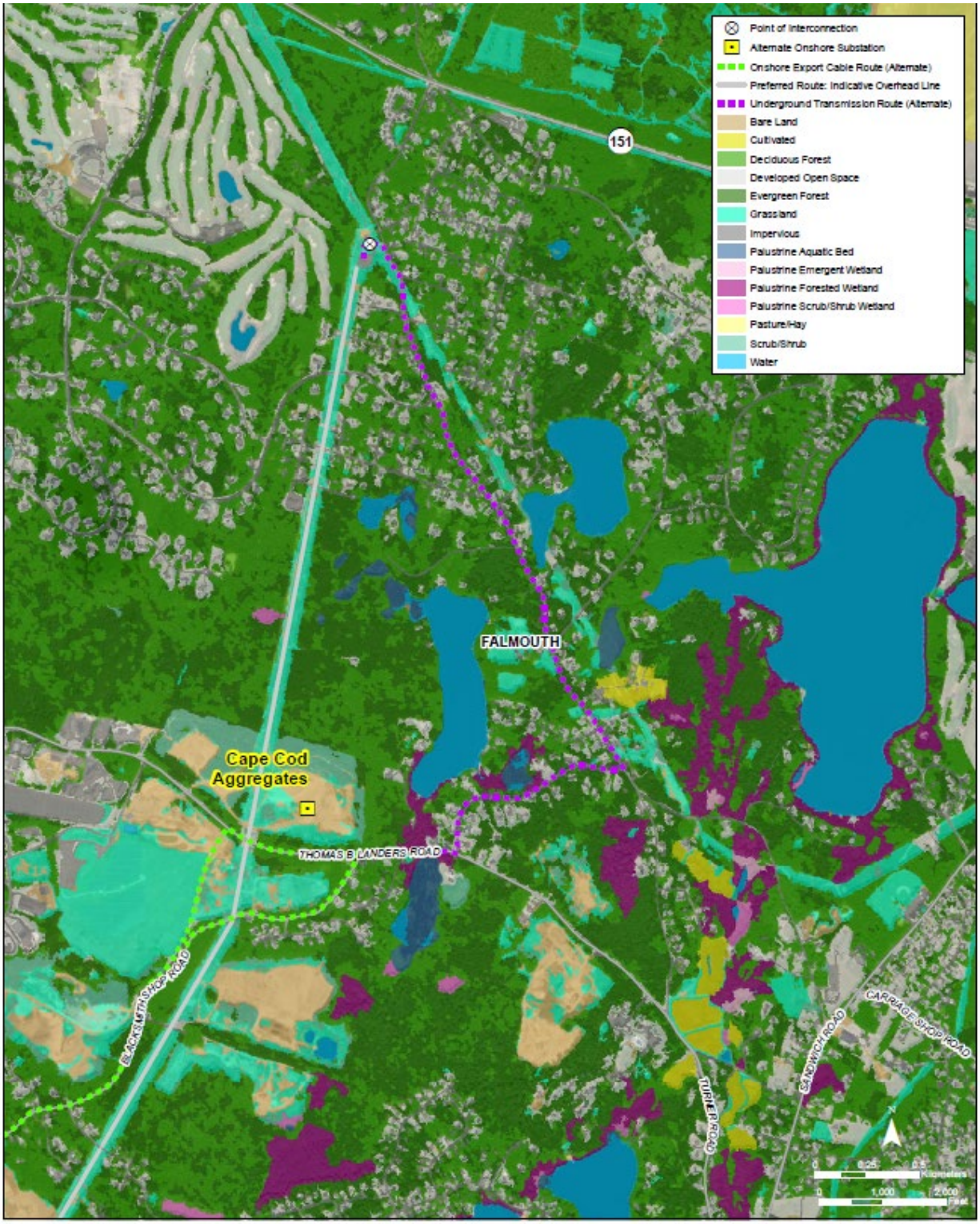
Data source: MassGIS, 2019a

Figure 4-2. Location and Extent of Land Use Cover Types and Natural Communities in the Falmouth Onshore Project Area and Surrounding Landscape – Detail



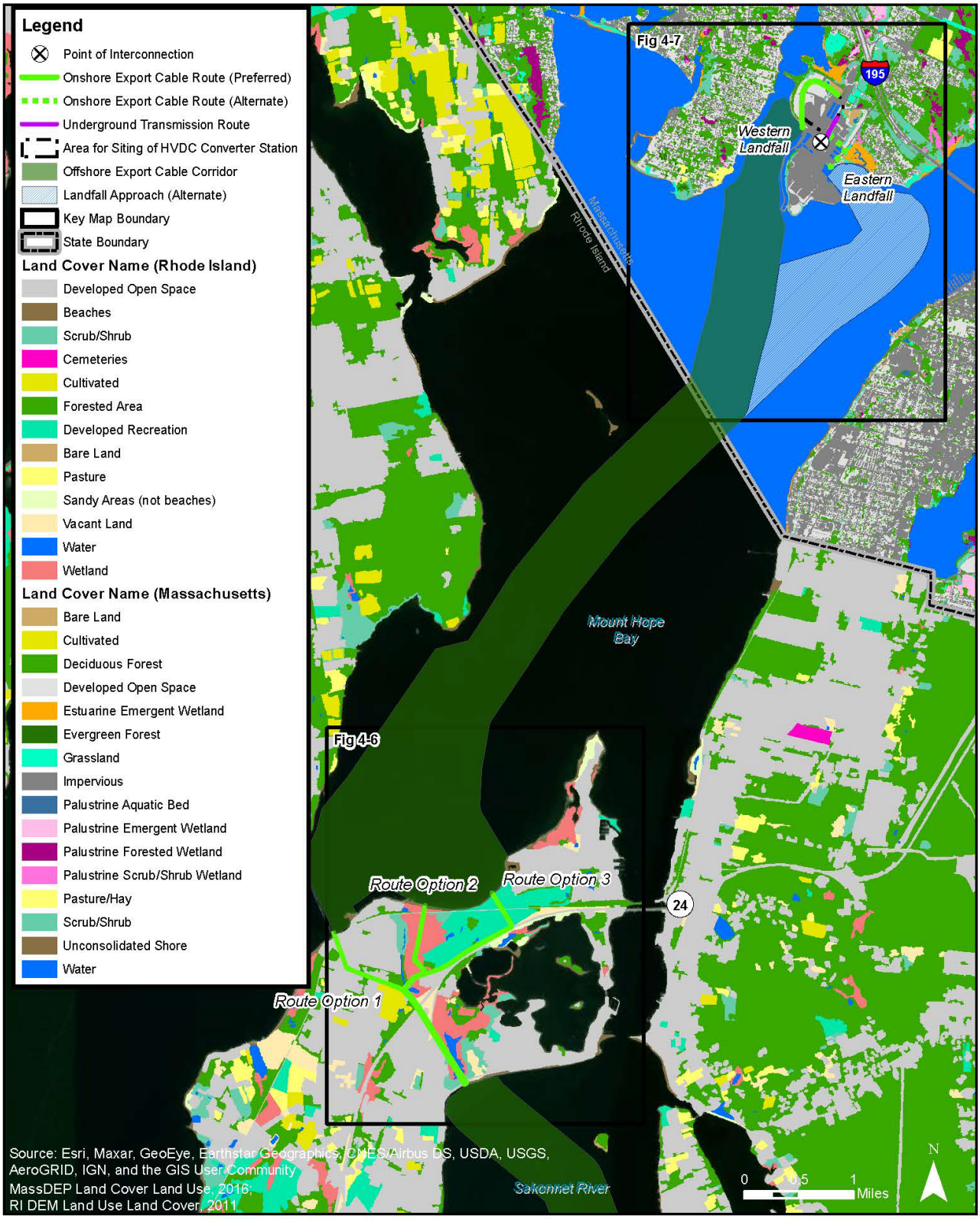
Data source: MassGIS, 2019a

Figure 4-3. Location and Extent of Land Use Cover Types and Natural Communities in the Falmouth Onshore Project Area and Surrounding Landscape – Detail



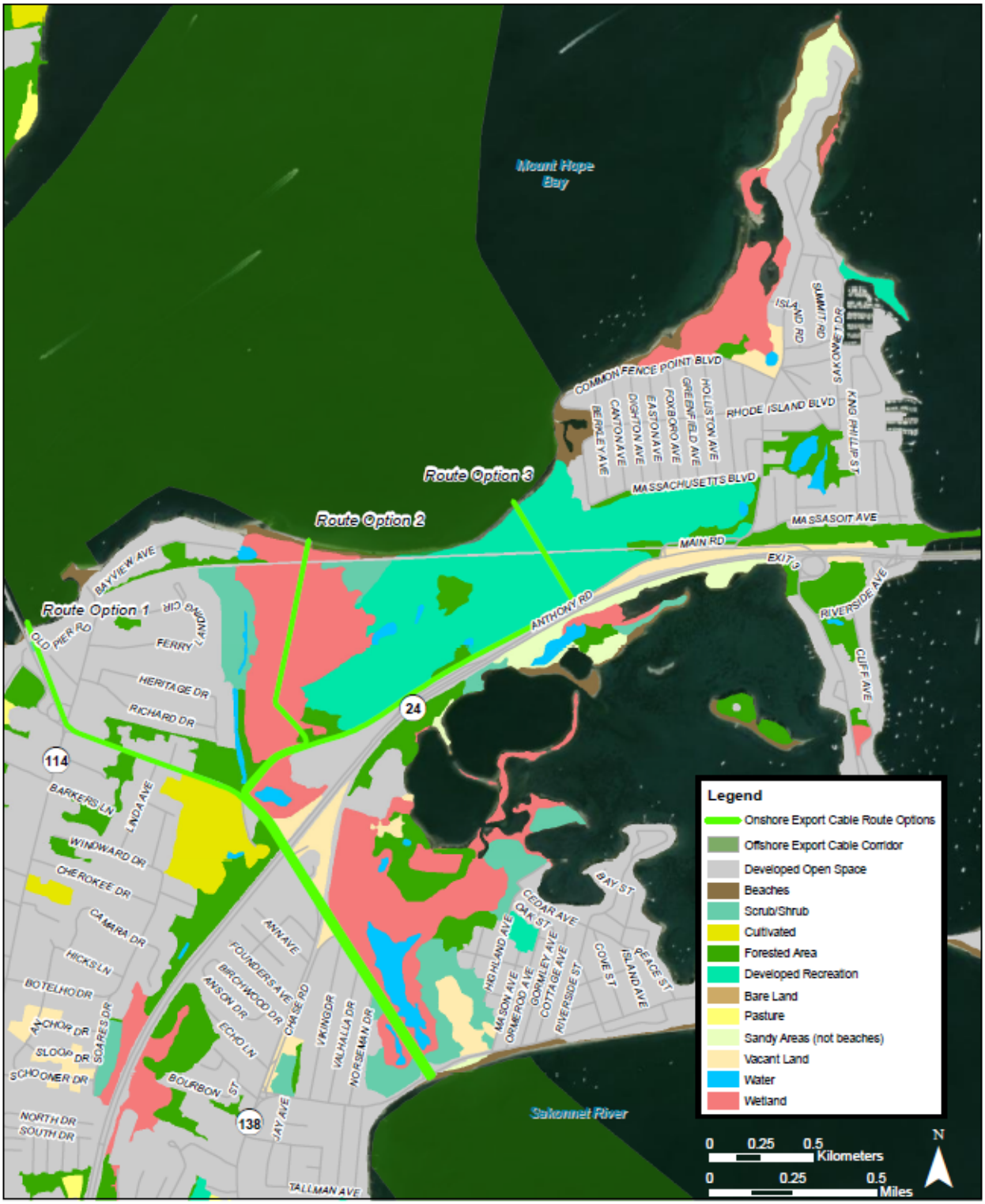
Data source: MassGIS, 2019a

Figure 4-4. Location and Extent of Land Use Cover Types and Natural Communities in the Falmouth Onshore Project Area and Surrounding Landscape – Detail



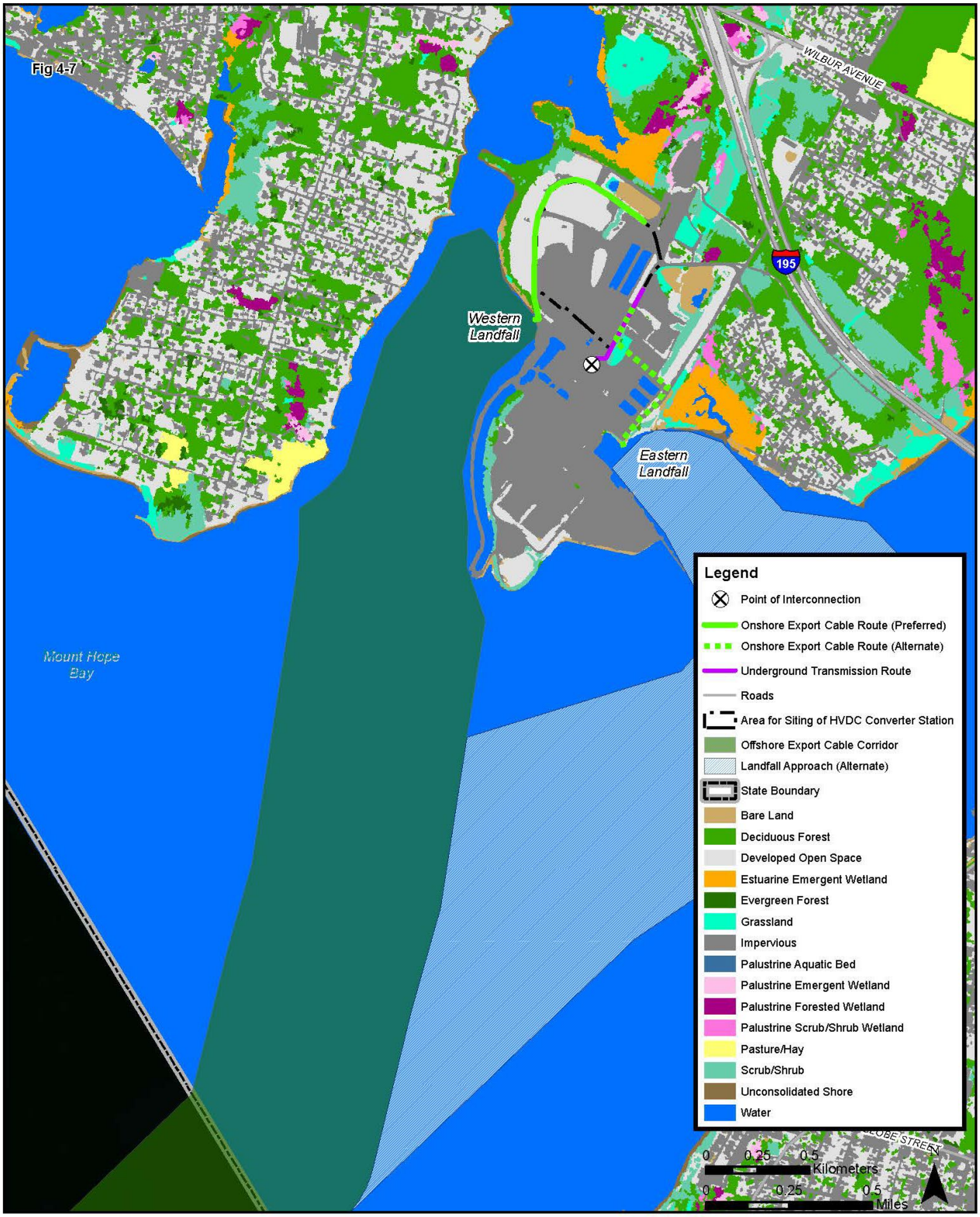
Data source: MassGIS, 2019a; RIGIS, 2021

Figure 4-5. Location and Extent of Land Use Cover Types and Natural Communities in the Brayton Point Onshore Project Area and Surrounding Landscape – Overview



Data source: RIGIS, 2021

Figure 4-6. Location and Extent of Land Use Cover Types and Natural Communities in the Brayton Point Onshore Project Area and Surrounding Landscape – Detail



Data source: MassGIS, 2019a

Figure 4-7. Location and Extent of Land Use Cover Types and Natural Communities in the Brayton Point Onshore Project Area and Surrounding Landscape – Detail

4.1.3 Land Use Cover Types and Natural Communities Mapped Within and Adjacent to the Onshore Project Areas

As the term “natural communities” refers to specific vegetated communities, “land use cover types” is a broader classification that may include groupings of similar natural communities, areas that have similar anthropogenic uses and similar ecological values, and parcels that are devoid of vegetation and ecological resources (e.g., roadways). These cover types and natural communities that occur along the Falmouth and/or Brayton Point Onshore Project Areas are defined in Sections 4.1.3.1 to 4.1.3.9.

4.1.3.1 Bare Land

Bare/vacant land contains very little or no vegetative cover. Within the Onshore Project Areas this land cover is often associated with human development. These areas are often previously developed and some of these areas in the Onshore Project Area are used for resource extraction (i.e., sand and gravel mining). In many areas, the thin layer of topsoil that overlays the sandy sub-soil has been removed, inhibiting the growth of plants. This land cover is considered a poor habitat for both flora and fauna.

4.1.3.2 Impervious (Paved Surfaces)

Impervious land consists of areas that have been extensively altered by humans to contain surfaces such as roads, parking lots, and vertical development. These areas are considered poor habitat for flora and fauna and most species that are present are either opportunistic or planted.

4.1.3.3 Developed Open Space

Developed Open Space land within the Onshore Project Area predominantly consists of previously disturbed land. Disturbed land does not usually provide valuable habitat for native or rare flora and fauna. Wildlife inhabiting these areas are often generalists or opportunistic species. A large portion of flora is either invasive, introduced, or maintained. These are areas that if left unmaintained will likely revert to a semi-natural setting. These areas can include utility line ROWs and minimally affected areas. Developed Open Space areas do not preclude use by native species, and some areas provide high value habitat in the form of grasslands and other early successional habitat. Representative herbaceous vegetation includes mostly early successional species such as little bluestem (*Schizachyrium scoparium*), Pennsylvania sedge (*Carex pensylvanica*), poverty grass (*Danthonia spicata*), goldenrods (*Solidago* spp.), and milkweeds (*Asclepias* spp.).

4.1.3.4 Evergreen Forest

The evergreen forest group within the Onshore Project Area consists predominantly of Pitch Pine-Oak Forest Woodland and is one of the dominant natural communities surrounding the Onshore Project Areas. Pitch pine (*Pinus rigida*) is one of the most drought tolerant plants in the northeastern U.S. and is a common dominant species on Upper Cape Cod where it is adapted to the sandy soil, low nutrient availability, and frequent fires as it has the capability to base sprout (Brockman and Merrilees, 1986).

Species composition within this ecosystem includes numerous stunted or short species of fully-grown trees and saplings of pitch pine, scrub oak (*Quercus ilicifolia*), white oak (*Q. alba*), scarlet oak (*Q. coccinea*), and occasional additions of black oak (*Q. velutina*) and eastern white pine (*Pinus strobus*). These species create an overstory that varies between full and patchy while the understory ranges accordingly between sparse and clustered to a dense shrub layer of shorter huckleberry (*Gaylussacia baccata*) and bracken fern (*Pteridium aquilinum*). Occasionally berries including Blue Ridge blueberry (*Vaccinium pallidum*), lowbush blueberry (*Vaccinium angustifolium*), and bearberry (*Arctostaphylos uva-ursi*) are interspersed. Herbaceous species are usually limited but can include wild sarsaparilla (*Aralia nudicaulis*), wintergreen (*Gaultheria procumbens*), and Pennsylvania sedge. Pitch pine habitats are typically not very diverse floristically due to the specific adaptations needed to thrive in this area (Swain, 2020).

4.1.3.5 Deciduous Forest

Deciduous forests in this region are characterized by overstory species of scarlet oak, black oak, eastern white pine, and pitch pine. Within this ecosystem, oaks are the dominant species. Understory species include shrubs of black huckleberry, blueberry (*Vaccinium* spp.), and bracken fern. Mixed hardwood forests are classified as a climax community.

4.1.3.6 Coastal Beach

Coastal beach habitat is located above the high tide line, but seaward of sand dune landforms (if present). Sand is the primary substrate for this habitat type, which is often subject to high winds, sand migration, and overwash during coastal storms and astronomical high tides (Swain, 2020). Due to these environmental factors, vegetation is typically sparse. Vegetation that may be present within the coastal beach habitat include American searocket (*Cakile edentula*), dunegrass (*Ammophilia breviligulata*), prickly saltwort (*Salsola kali*), and American beachgrass (*Ammophila breviligulata*).

When areas of dune habitat are present landward of the coastal beach, the vegetation species colonizing these similarly dynamic habitats primarily consists of dunegrass, beach heather (*Hudsonia tomentosa*), seaside goldenrod (*Solidago sempervirens*), beach pea (*Lathyrus japonicus*), poison ivy (*Toxicodendron radicans*), and beach rose (*Rosa rugosa*) (Swain, 2020).

4.1.3.7 Scrub/Shrub

Within the Onshore Project Area, most Scrub/Shrub habitat consists of previously disturbed areas that have begun to regenerate. These areas are common in ROWs and other areas that are under a consistent vegetation management regime.

Natural scrub/shrub ecosystems consist of low growing vegetation and are common near the Onshore Project Areas due to the low-nutrient soils. Dominant plants in this ecosystem include scrub oak, sweet pepperbush (*Clethra alnifolia*), highbush blueberry (*Vaccinium corymbosum*), and spicebush (*Lindera benzoin*) (Swain, 2020).

4.1.3.8 Grasslands

Within the Onshore Project Area, most areas classified as Grassland habitats are previously disturbed areas of existing utility-owned ROWs that are maintained in a low-growing herbaceous layer of plants. These areas can also be found on residential and commercial properties as maintained lawns.

Natural grasslands are areas that contain low-growing herbaceous species. Within the Onshore Project Area, most grassland habitat is considered disturbed area because the majority is mowed or maintained. Most forest management operations in Barnstable County, Massachusetts include clearing land for grassland, savannah, and other restoration efforts (Massachusetts Department of Conservation and Recreation [MADCFR], 2018). Common dominant species are those adapted to the nutrient-poor droughty soil such as bluestem, poverty grass, goldenrods, and milkweeds.

Large Agricultural Grassland (Cultivated) habitats are present on Aquidneck island. These Pasturelands are vegetated with grasses and other plants for grazing animals, but may also contain scattered small shrubs and other plants that are avoided by livestock. These habitats are manmade and generally contain many invasive plants; but the grasslands still serve as a habitat for many species, such as grassland nesting birds (RIDEM, 2021). Although there is a grasslands presence on Aquidneck Island, the Brayton Point Onshore Project Area does not pass through much of this community type.

4.1.3.9 Water

Waters are any open fresh surface water body in the Onshore Project Areas. Waters include streams, rivers, canals, and ponds. A site investigation of the Falmouth Onshore Project Area conducted in April 2020 determined that on the Lawrence Lynch Site there are three small waterbodies. The waterbodies consist of a stormwater management area and two ponds. In addition, there are two offsite features (Sols Pond and a

wetland to the northeast) with buffer zones that extend onto the property. There are no freshwater features associated with the Cape Cod Aggregates site.

As the Brayton Point onshore export cable crosses over Aquidneck Island, it passes near several freshwater streams and ponds. Founders Brook is a 1.2 mile (1.9 km) long stream, available for recreational activities and for fish and wildlife habitat, and multiple other uses (RIGIS, 2021). The export cables will cross Founders Brook along the existing ROW. Town Pond is located near the export cables where Route Options 2 and 3 diverge toward the east. The other ponds located along the route are small and unnamed. Along the shoreline, closest to Route Option 3, there are some shallow coastal bays east of the export cable route from landfall on the southern side of Aquidneck and along the Route Option 3 before it turns north that make up Island Park Cove (RIGIS, 2021). Although no natural freshwater features are crossed at Brayton Point, there are some small, shallow industrial manmade ponds associated with the former power plant in close proximity to the location of the onshore export cable routes, underground transmission route, HVDC converter station, and Brayton Point POI. There are no natural freshwater features associated with the Brayton Point HVDC converter station area.

4.1.4 Wetlands

Wetland areas are of special importance as they are unique ecosystems providing important biological, physical, and chemical functions. Wetlands are often protected through federal, state, and local laws. Further investigation of the Onshore Project Areas as well as field surveys may be required in order to determine the extent and type of wetlands present. During field surveys within the Onshore Project Areas, both federal- and state-regulated wetlands will be identified and delineated as necessary.

4.1.4.1 Falmouth Onshore Project Area

Characteristic palustrine wetland types occurring near the Falmouth Onshore Project Area include red maple swamps, Atlantic white cedar bogs, kettlehole bogs, highbush blueberry thickets, shrub swamps, and emergent marsh. Figure 4-8 shows the overview of the Falmouth Onshore Project Area and Figure 4-9 through Figure 4-11 show the relative location of wetlands and vernal pools within the area of the Project using public data from the MassGIS (MassGIS, 2018a; MassGIS, 2020), as well as private data from previous delineations conducted in the Falmouth Onshore Project Area. The wetlands depicted in the figures are general cover types (e.g., Forested Wetland). Examples of natural wetland communities common to Upper Cape Cod include:

Red Maple Swamp

Red maple (*Acer rubrum*) swamps are the most common forested wetlands in Massachusetts (Swain, 2020). Within these wetlands, red maple is the dominant species in the tree stratum. The shrub layer within red maple swamps in Eastern Massachusetts typically includes sweet pepper-bush, highbush blueberry, northern arrow-wood (*Viburnum dentatum*), spicebush, and greenbrier (*Smilax rotundifolia*). Ferns are typically abundant with cinnamon fern (*Osmundastrum cinnamomeum*) being the most common. Other ferns include sensitive fern (*Onoclea sensibilis*), royal fern (*Osmunda regalis*), marsh fern (*Thelypteris palustris*), and spinulose wood fern (*Dryopteris carthusiana*). Skunk cabbage (*Symplocarpus foetidus*) is one of the most common herbaceous species.

Atlantic White Cedar Bog

Atlantic white cedar bogs are semi-forested, acidic, dwarf-shrub wetlands (Natural Heritage and Endangered Species Program [NHESP], 2016a). Short (6-30 ft [2-10 m]) Atlantic white cedar (*Chamaecyparis thyoides*) trees dominate the open canopy. An open to nearly continuous, low (3 ft [1 m]) shrub layer often includes small Atlantic white cedars. Scattered red maple may be present with occasional associates including white and pitch pine, grey birch (*Betula populifolia*), and black spruce (*Picea mariana*). Scattered tall shrubs may be present and include highbush blueberry and swamp azalea. A dense low shrub layer is frequently comprised of leatherleaf, sheep laurel (*Kalmia angustifolia*), black huckleberry, rhodora (*Rhododendron canadense*), and bog rosemary (*Andromeda polifolia* var. *glaucophylla*). There is typically a well-formed sphagnum moss (*Sphagnum* spp.) layer below the shrubs, and large and small cranberry (*Vaccinium macrocarpon* and *V. oxycoccos*), sundews (*Drosera* spp.), and pitcher plants (*Sarracenia purpurea*) may be present.

Kettlehole Level Bog

Kettlehole level bogs are unique peatland ecosystems that develop in valley bottoms without inlets or outlets. Species composition in this ecosystem includes sphagnum moss blueberries, leatherleaf (*Chamaedaphne calyculata*), and species of laurel (*Kalmia* spp.). The NHESP identifies this ecosystem as Imperiled (NHESP, 2016b).

Shrub Swamp

Shrub swamps are shrub-dominated wetlands and often occur within overhead electric utility ROWs as a result of previous tree clearing for installation of the utility and subsequent integrated vegetation management activities that targets removal of tree species while allowing for continued growth and establishment of low-growing species, such as shrubs. The species composition of shrub swamps is highly variable and can include meadowsweet (*Spiraea alba* var. *latifolia*), steeplebush (*Spirea tomentosa*), swamp azalea, silky dogwood (*Swida amomum*), winterberry (*Ilex verticillata*), sweet gale (*Myrica gale*), and arrowwood. Low-growing, weak-stemmed shrubs include dewberry (*Rubus hispidus*), water-willow (*Decodon verticillatus*), and Canadian burnet (*Sanguisorba canadensis*). The herbaceous layer often includes common arrowhead (*Sagittaria latifolia*), skunk cabbage, ferns, sedges (*Carex* spp.), bluejoint grass (*Calamagrostis canadensis*), bur reed (*Sparganium* spp.), virgin's-bower (*Clematis virginiana*), swamp candles (*Lysimachia terrestris*), clearweed (*Pilea pumila*), and turtlehead (*Chelone glabra*). Sphagnum moss is often abundant. Invasive species include reed canary-grass (*Phalaris arundinacea*), glossy buckthorn (*Frangula alnus*), common buckthorn (*Rhamnus alnifolia*), and purple loosestrife (*Lythrum salicaria*) (Swain, 2020).

Emergent Marsh

The deep emergent marsh wetland type occurs along rivers, streams, lakes, ponds, and other waterbodies. Water depths are less than 3 ft (1 m), though some depth of water is usually always present in most years and influences the vegetation present. Often this wetland type is part of a wetland mosaic with shrub swamp and forested wetland bordering the emergent portions of the wetland. Vegetation consists primarily of herbaceous species and graminoids. These often include broad-leaved cattail (*Typha latifolia*), sphagnum moss, wool-grass (*Scirpus cyperinus*), common threesquare (*Schoenoplectus pungens*), bluejoint grass, reed canary-grass, rice cut-grass (*Leersia oryzoides*), tussock-sedge (*Carex stricta*), arrow-leaf tearthumb (*Persicaria sagittata*), beggar-ticks (*Bidens* spp.), bedstraw (*Galium* spp.), common arrowhead, slender-leaved goldenrod (*Euthamia caroliniana*), marsh-fern, marsh St. John's-wort (*Triadenum virginicum*), Joe-Pye-weeds (*Eutrochium* spp.), bonesets (*Eupatorium* spp.), and water-horehound (*Lycopus* spp.). Areas with more permanent open water often support floating-leaved plants like water-lilies (*Nymphaea odorata* and *Nuphar* spp.). Shrubs can include red osier dogwood (*Swida sericea*), leatherleaf (*Chamaedaphne calyculata*), sweet-gale, meadowsweet, steeplebush, and highbush blueberry; however, shrub cover is sparse (Swain, 2020).

Highbush Blueberry Thicket

Highbush blueberry thickets are peatlands that host tall shrubs and sometimes small red maple trees. Common species within this ecosystem include the namesake highbush blueberry along with other common blueberry species including swamp azalea (*Rhododendron viscosum*), winterberry (*Ilex verticillata*), and sweet pepperbush. The NHESP identifies this ecosystem as Secure (NHESP, 2016c).

Vernal pools

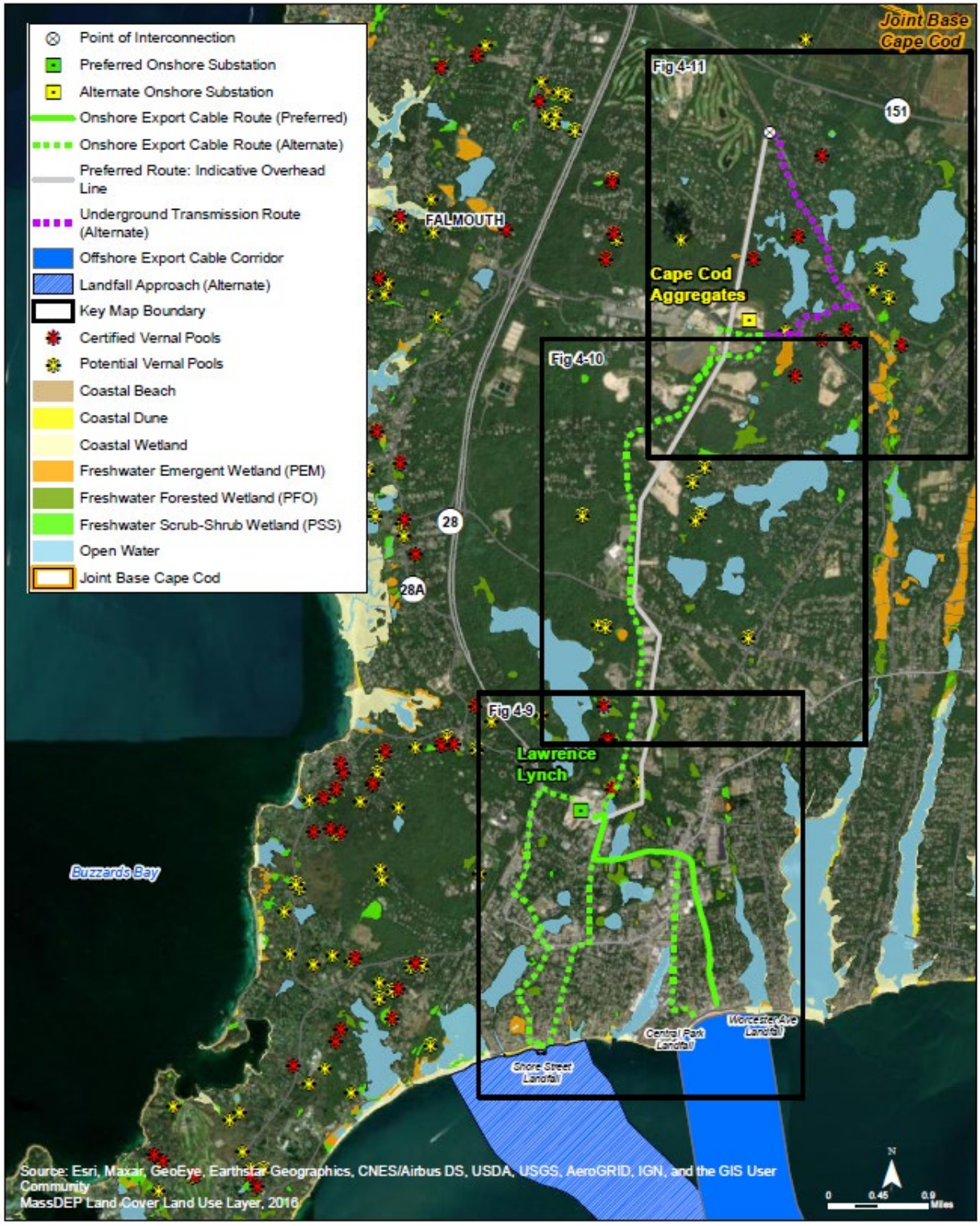
Vernal pools are temporary pools or ponds, typically occurring within wetlands, that fill with water in the fall or winter due to rainfall and seasonal high groundwater levels and remain ponded through the spring and into summer. Often vernal pools dry up completely by the middle or end of the summer, or at least every few years, which prevents fish populations from becoming established within the pool. The absence of fish is critical to the reproductive success of many amphibian and invertebrate species that rely exclusively on vernal pools to provide breeding habitat, including wood frog (*Lithobates sylvaticus*), mole salamanders (*Ambystoma* spp.), and fairy shrimp (*Eubranchipus* spp.). For this reason, vernal pools are a unique and sensitive aquatic habitat, and have specific protections under both the Massachusetts Wetlands Protection Act regulations (310 Code of Massachusetts Regulations [CMR] 10.00) and the U.S. Army Corps of Engineers New England District's General Permits for the Commonwealth of Massachusetts for activities subject to Corps jurisdiction in waters of the U.S., including wetlands.

Certain cover types (wetlands, waters, and vernal pools) in the state of Massachusetts have regulated buffer zones that extend from their perimeters. Impacts to a buffer zone are regulated similarly as an impact to the resource itself.

4.1.4.2 Brayton Point Onshore Project Area

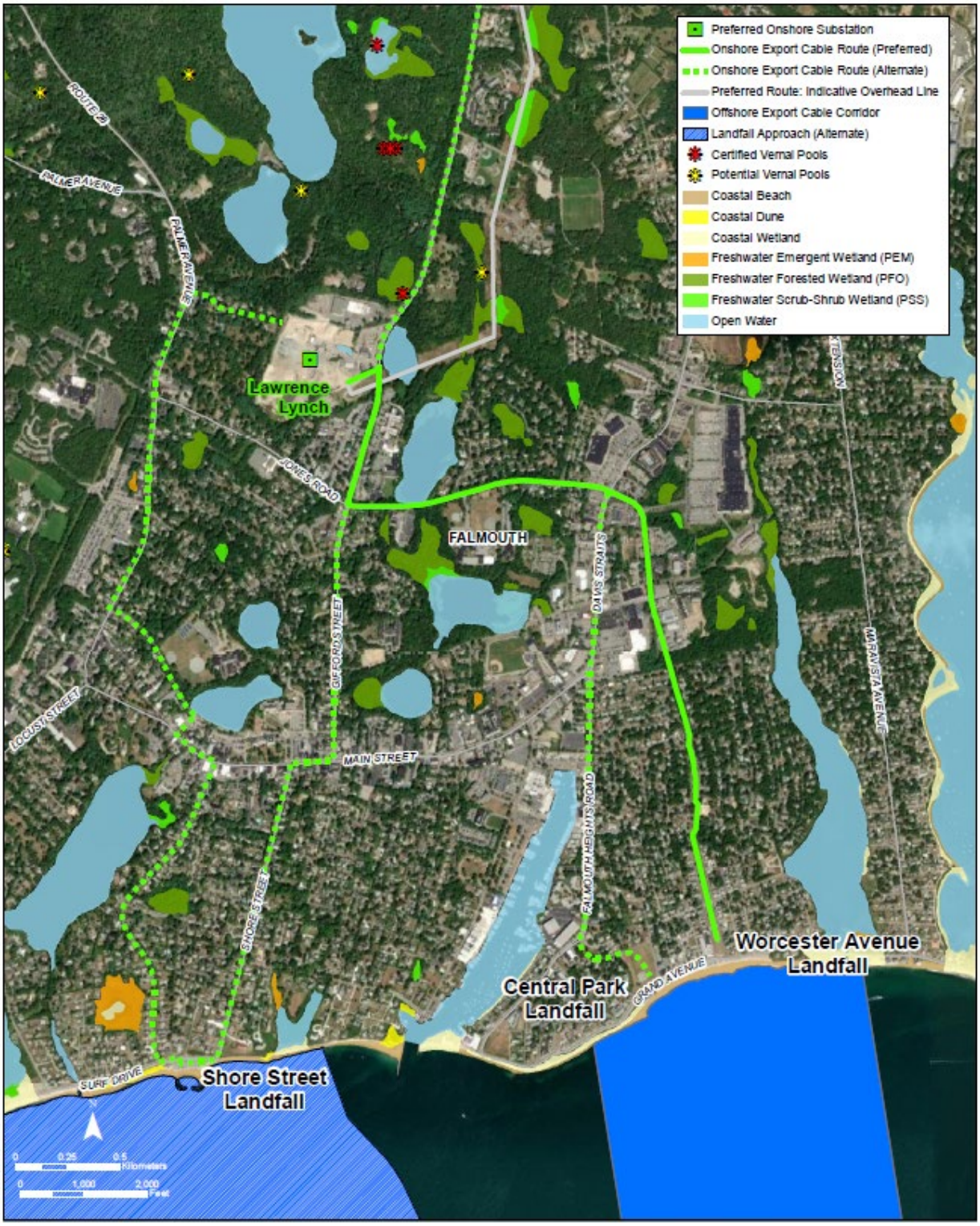
Figure 4-12 through Figure 4-14 show the location of wetlands within the Brayton Point Onshore Project Area using public data from MassGIS and RIGIS (MassGIS, 2018a; MassDEP, 2018b, MassGIS, 2020, and RIGIS, 1993). Freshwater wetlands are limited within the Brayton Point Onshore Project Area to a few ponds, coastal wetlands and emergent wetlands. There are no known certified vernal pools in close proximity to the route.

RIDEM defines a pond as a place not less than one-quarter acre (0.10 ha) in extent, natural or manmade, wholly or partly within the state of Rhode Island, where open standing or slowly moving water shall be present for at least six months a year (RIDEM, 2007a). Freshwater wetlands in the Project vicinity include freshwater emergent (PEM), freshwater forested (PFO), and freshwater scrub-shrub (PSS). RIDEM defines these wetlands as follows: An Emergent Plant Community is a freshwater wetland characterized by erect, rooted, herbaceous hydrophytic vegetation that is present for most of the growing season in most years, and that may be persistent or non-persistent in nature. A Forested Wetland is a freshwater wetland dominated by woody plants (trees) greater than 20 feet (6.1 m) tall. A Shrub Wetland is a freshwater wetland dominated by woody plants less than 20 feet (6.1 m) tall (RIDEM, 2007b).



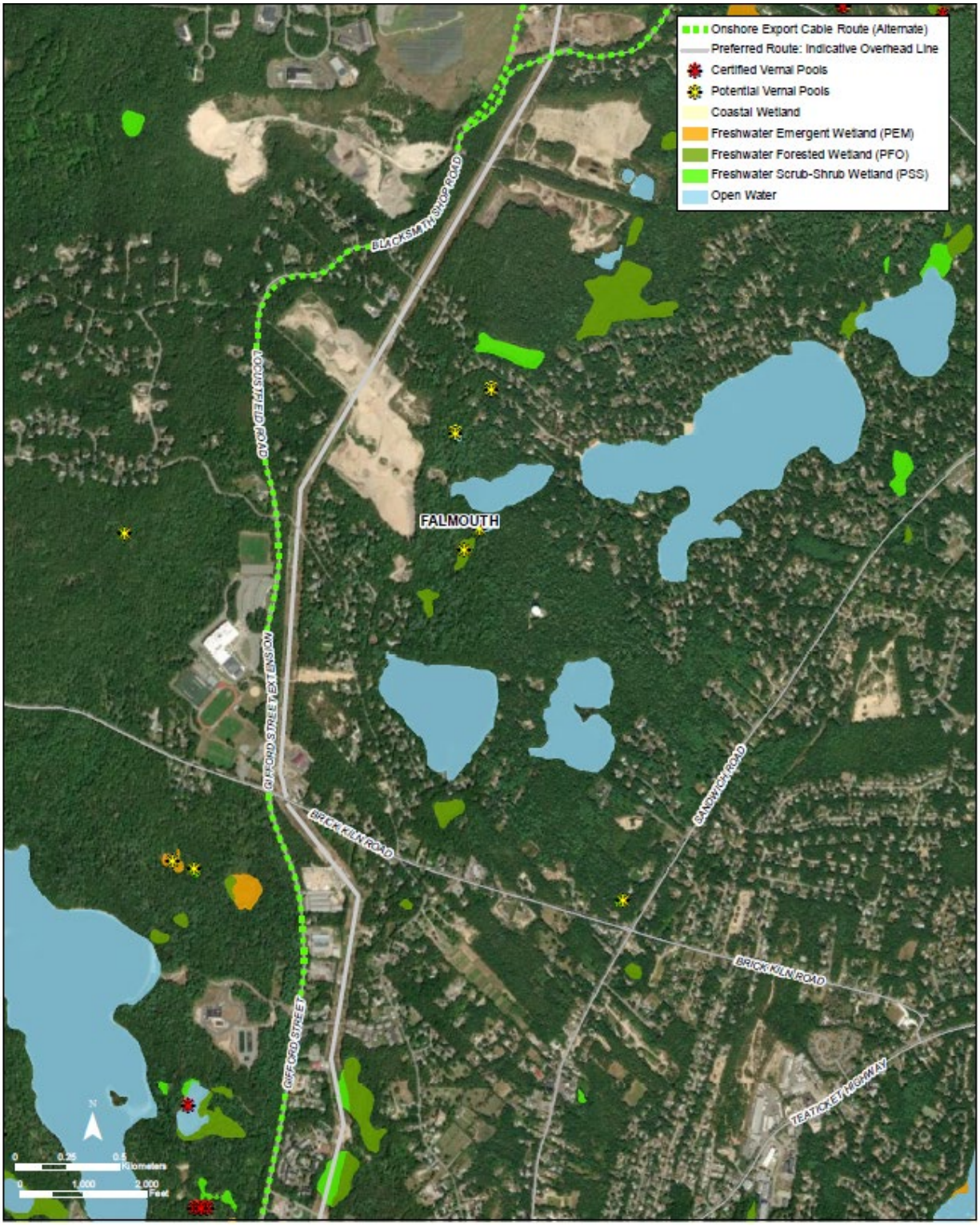
Data source: MassGIS, 2018a; MassGIS, 2018b; MassGIS, 2020

Figure 4-8. Location and Extent of Wetlands and Vernal Pools in the Falmouth Onshore Project Area and Surrounding Landscape – Overview



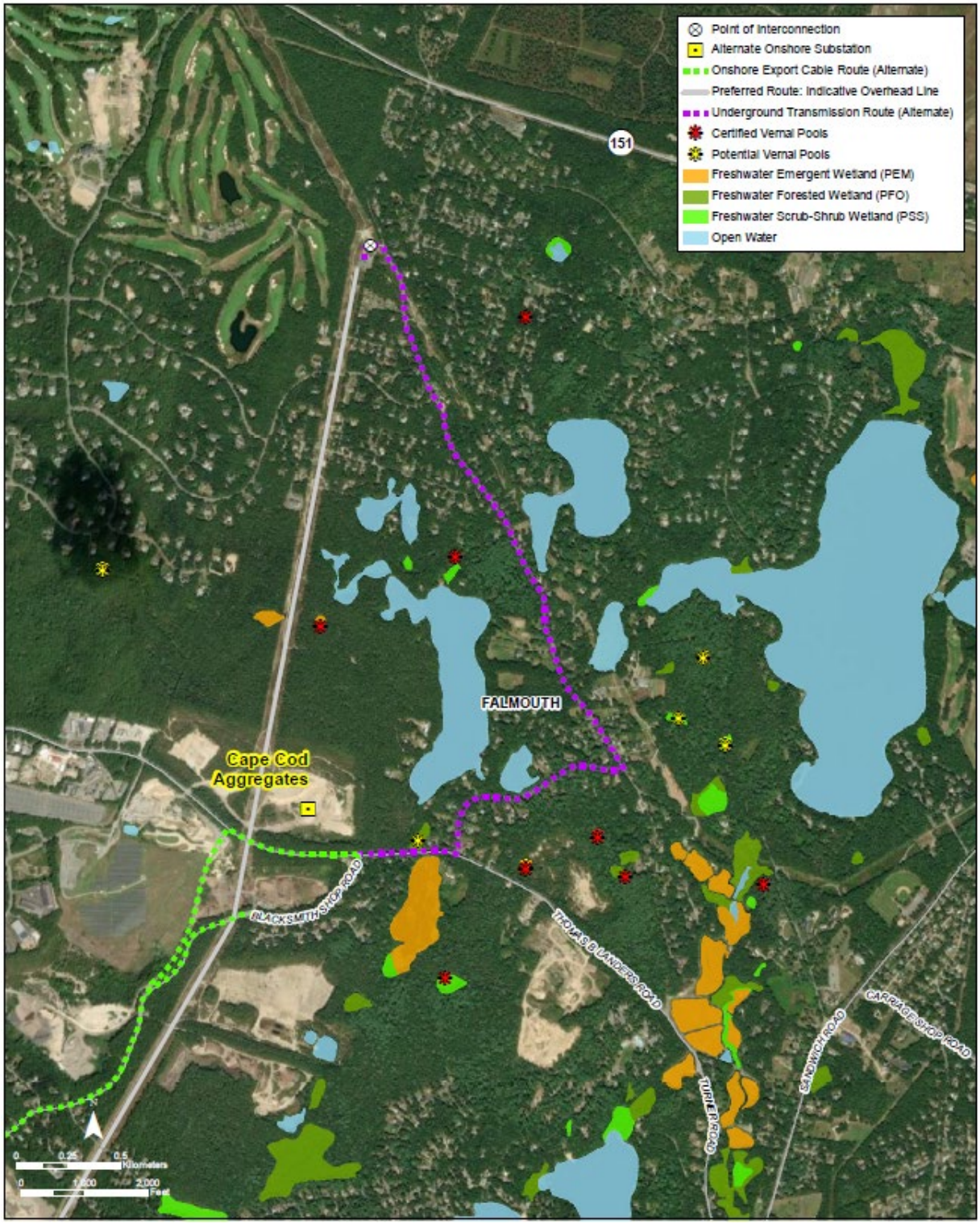
Data source: MassGIS, 2018a; MassGIS, 2018b; MassGIS, 2020

Figure 4-9. Location and Extent of Wetlands and Vernal Pools in the Falmouth Onshore Project Area and Surrounding Landscape – Detail



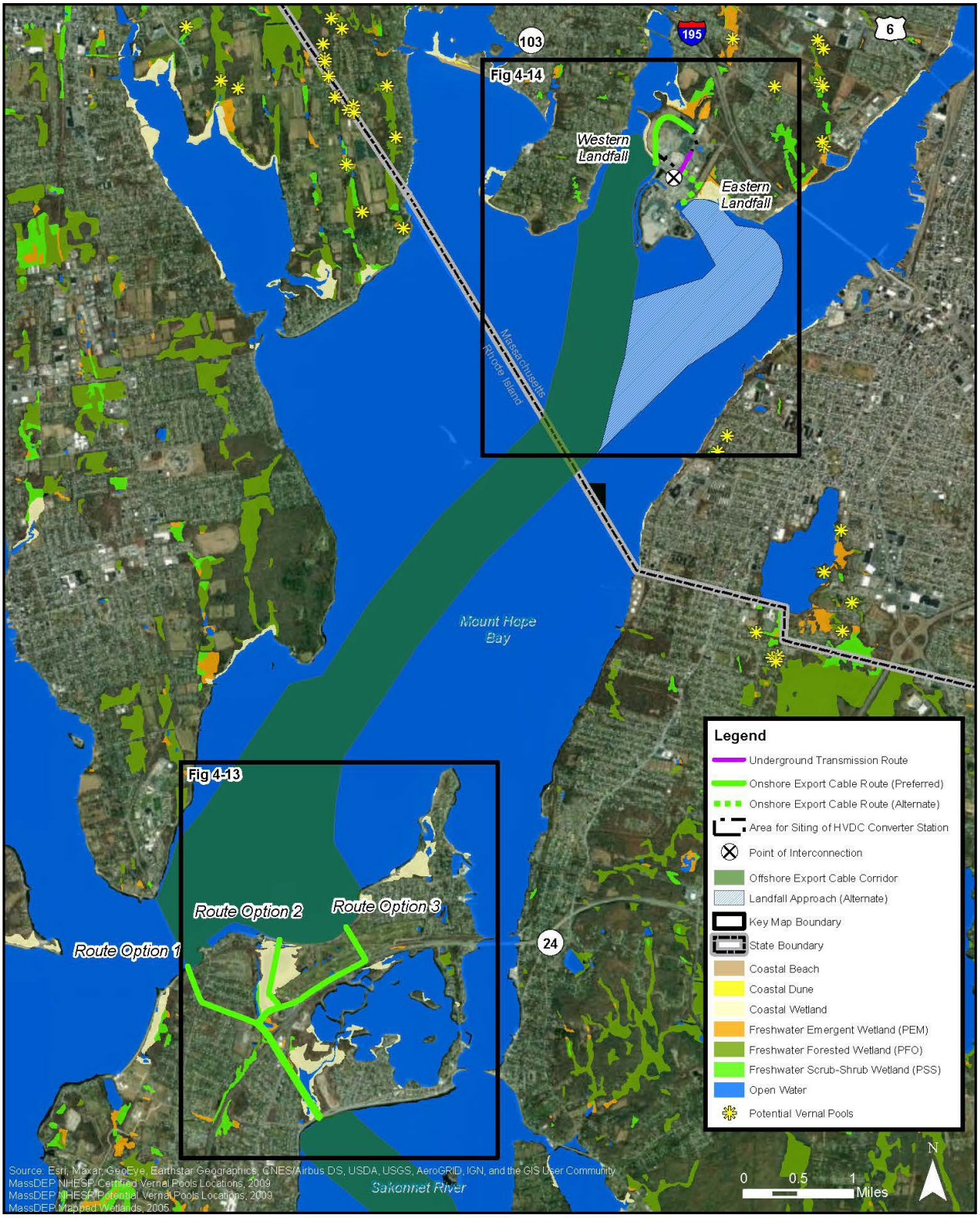
Data source: MassGIS, 2018a; MassGIS, 2018b; MassGIS, 2020

Figure 4-10. Location and Extent of Wetlands and Vernal Pools in the Falmouth Onshore Project Area and Surrounding Landscape – Detail



Data source: MassGIS, 2018a; MassGIS, 2018b; MassGIS, 2020

Figure 4-11. Location and Extent of Wetlands and Vernal Pools in the Falmouth Onshore Project Area and Surrounding Landscape – Detail

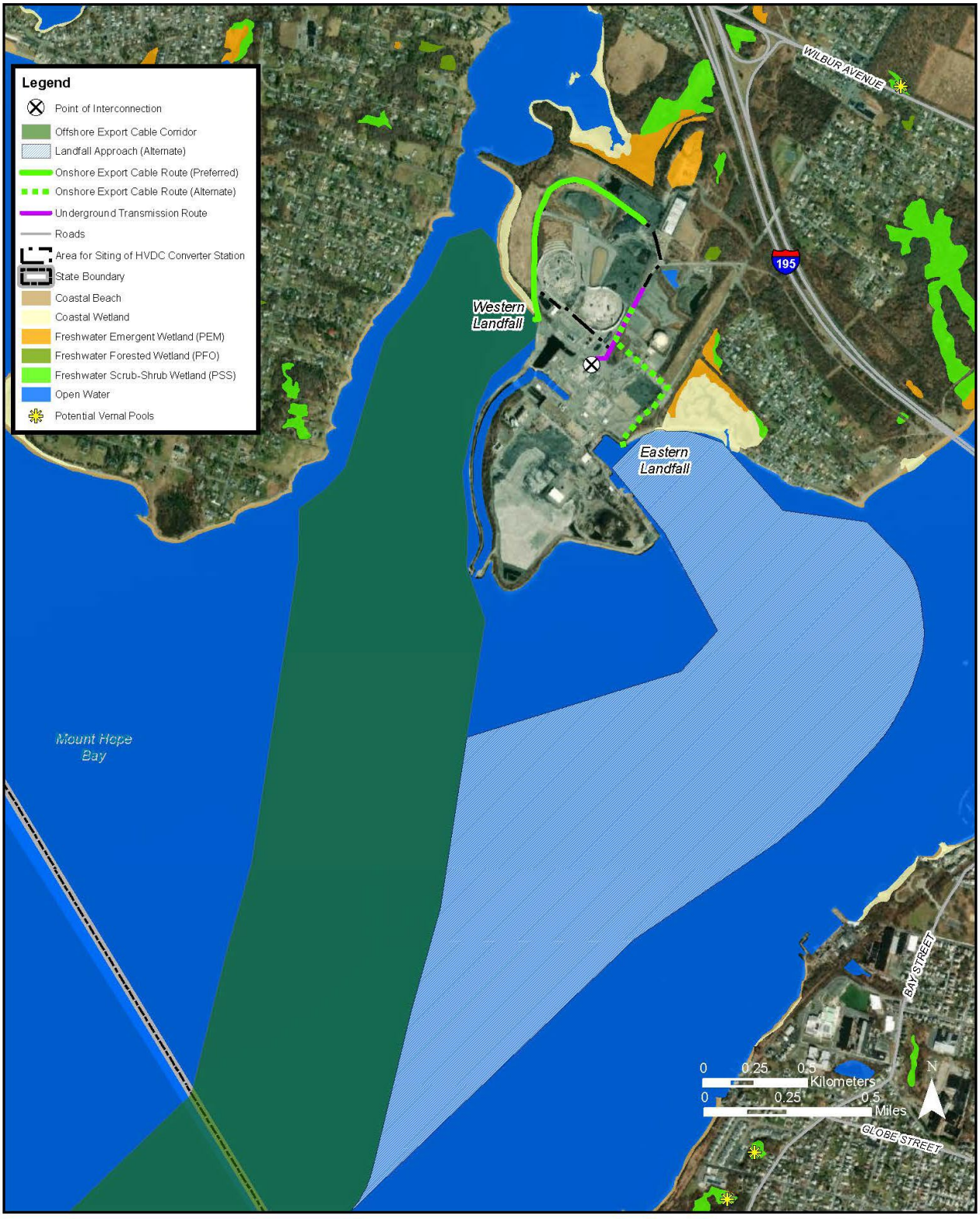


Data source: MassGIS, 2018a; MassGIS, 2018b; MassGIS, 2020; RIGIS, 1993

Figure 4-12. Location and Extent of Wetlands and Vernal Pools in the Brayton Point Onshore Project Area and Surrounding Landscape – Detail

Data source: RIGIS, 1993

Figure 4-13. Location and Extent of Wetlands and Vernal Pools in the Brayton Point Onshore Project Area and Surrounding Landscape – Detail



Data source: MassGIS, 2018a; MassGIS, 2018b; MassGIS, 2020

Figure 4-14. Location and Extent of Wetlands and Vernal Pools in the Brayton Point Onshore Project Area and Surrounding Landscape – Detail

4.1.5 Mapped Cover Types and Natural Communities Within Specific Project Components

4.1.5.1 Falmouth Onshore Project Area

Table 4-1 provides the approximate percentage and acreage of natural communities, as well as wetlands and vernal pool data, present within the immediate vicinity of the Project with the potential to be directly affected by construction, operation, and decommissioning activities (i.e., within a 40 ft wide [12 m wide] corridor centered on the landfall and underground export cable and transmission routes; within a 100 ft wide [30 m wide] corridor for the alternate underground transmission route, and within the potential substation sites). Wetlands and vernal pools were calculated using MassGIS data layers (MassGIS, 2018a; MassGIS, 2018b; MassGIS, 2020). Field reviews of the Falmouth Onshore Project Area will confirm the communities present as well as the relative proportions of these communities.

Specific natural communities and associated vegetation present within each component of the Project (i.e., landfall, onshore export cables, onshore substation sites, alternate underground transmission route, and POI) are detailed in the subsections below.

Table 4-1. Natural Communities Within the Falmouth Onshore Project Area

Land Use / Natural Community	Acres	Hectares	Percentage of Total Land Area
Landfall Locations (40 ft [12-m] corridor)			
Worcester Avenue (Preferred)			
Bare Land	0.260	0.105	24.9
Coastal Beach	0.617	0.250	59.2
Impervious	0.100	0.041	9.6
Unconsolidated Shore	0.065	0.026	6.2
Total	**1.043**	**0.422**	**100.0**
Shore Street (Alternate)			
Bare Land	0.111	0.045	11.1
Impervious	0.876	0.029	80.3
Unconsolidated Shore	0.090	0.036	8.2
Water	0.014	0.006	1.3
Total	**1.043**	**0.422**	**100.0**
Central Park (Alternate)			
Deciduous Forest	0.007	0.003	0.2
Developed Open Space	3.760	1.522	85.5
Impervious	0.629	0.255	14.3
Total	**4.397**	**1.779**	**100.0**
Onshore Export Cable Routes (40-ft [12-m] corridor)			
Worcester Avenue Route (Preferred)			
Bare Land	0.503	0.204	2.5
Deciduous Forest	2.889	1.574	19.5

Land Use / Natural Community	Acres	Hectares	Percentage of Total Land Area
Developed Open Space	5.232	2.117	26.2
Evergreen Forest	0.158	0.064	0.8
Grassland	0.178	0.072	0.9
Impervious	9.698	3.924	48.6
Palustrine Aquatic Bed	0.007	0.003	0.0
Palustrine Forested Wetland	0.131	0.053	0.7
Palustrine Scrub/Shrub Wetland	0.083	0.033	0.4
Scrub/Shrub	0.062	0.025	0.3
Total	**19.941**	**8.070**	**100.0**
Shore Street Route Eastern Option (Alternate)			
Bare Land	0.137	0.055	0.8
Deciduous Forest	3.076	1.245	18.1
Developed Open Space	2.839	1.149	16.7
Evergreen Forest	0.221	0.089	1.3
Grassland	0.138	0.056	0.8
Impervious	10.533	4.263	62.0
Scrub/Shrub	0.043	0.017	0.3
Total	**16.987**	**6.874**	**100.0**
Shore Street Route Western Option (Alternate)			
Bare Land	0.029	0.012	0.1
Deciduous Forest	3.874	1.568	17.6
Developed Open Space	3.970	1.607	18.0
Evergreen Forest	0.131	0.053	0.6
Grassland	0.102	0.041	0.5
Impervious	13.613	5.509	61.7
Palustrine Emergent Wetland	0.016	0.006	0.1
Palustrine Forested Wetland	0.235	0.095	1.1
Scrub/Shrub	0.088	0.036	0.4
Total	**22.056**	**8.926**	**100.0**
Central Park Route (Alternate)			
Bare Land	0.067	0.027	0.6
Deciduous Forest	1.526	0.618	12.8
Developed Open Space	2.426	0.982	20.3
Evergreen Forest	0.060	0.024	0.5

Land Use / Natural Community	Acres	Hectares	Percentage of Total Land Area
Impervious	7.874	3.186	65.9
Total	**11.953**	**4.837**	**100.0**
Lawrence Lynch to Cape Cod Aggregates Route (Alternate)			
Bare Land	0.125	0.051	0.3
Deciduous Forest	9.348	3.783	24.9
Developed Open Space	4.135	1.673	11.0
Evergreen Forest	3.731	1.510	10.0
Grassland	0.217	0.088	0.6
Impervious	18.941	7.665	50.6
Palustrine Forested Wetland	0.792	0.320	2.1
Scrub/Shrub	0.177	0.072	0.5
Water	0.001	0.001	0.0
Total	**37.468**	**15.163**	**100.0**
Paper Road – Thomas B Landers Road Deviation (Alternate)			
Bare Land	1.150	0.465	16.4
Deciduous Forest	1.629	0.659	23.3
Developed Open Space	0.428	0.173	6.1
Evergreen Forest	0.196	0.079	2.8
Grassland	1.109	0.449	15.8
Impervious	2.267	0.918	32.4
Scrub/Shrub	0.223	0.090	3.2
Total	**7.001**	**2.833**	**100.0**
Onshore Substation Locations			
Lawrence Lynch (Preferred)			
Bare Land	18.788	7.603	76.3
Impervious	0.627	0.254	2.5
Deciduous Forest	2.693	1.090	10.9
Grassland	1.277	0.517	5.2
Water	0.842	0.341	3.4
Scrub/shrub	0.134	0.054	0.5
Developed Open Space	0.148	0.060	0.6
Palustrine Aquatic Bed	0.108	0.044	0.4
Total	**24.617**	**9.962**	**100.0**

Land Use / Natural Community	Acres	Hectares	Percentage of Total Land Area
Cape Cod Aggregates (Alternate)			
Bare Land	12.672	5.128	41.4
Deciduous Forest	1.185	0.480	3.9
Developed Open Space	0.069	0.028	0.2
Evergreen Forest	1.176	0.476	3.8
Grassland	7.946	3.216	26.0
Impervious	0.038	0.015	0.1
Scrub/Shrub	7.521	3.044	24.6
Total	**30.606**	**12.386**	**100.0**
Underground Transmission Route (alternate) from Cape Cod Aggregates to POI (100-ft [30-m] corridor)			
Bare Land	0.104	0.042	0.2
Deciduous Forest	12.951	5.241	25.3
Developed Open Space	6.048	2.447	11.8
Evergreen Forest	13.365	5.408	26.1
Grassland	4.123	1.669	8.1
Impervious	12.436	5.032	24.3
Palustrine Aquatic Bed	0.147	0.060	0.3
Palustrine Forested Wetland	2.002	0.810	3.9
Total	**51.175**	**20.710**	**100.0**
Point of Interconnection (Falmouth Switching Station)			
Bare Land	1.477	0.598	28.8
Deciduous Forest	0.021	0.009	0.4
Evergreen Forest	0.037	0.015	0.7
Grassland [see note 2]	2.822	1.142	55.0
Impervious	0.776	0.314	15.1
Total	**5.133**	**2.077**	**100.0**

Notes:
1 – A portion of the mapped polygon may contain facility structures.
2 – May include previously disturbed lands
Data source: MassGIS, 2018a; MassGIS, 2018b; MassGIS, 2019a; MassGIS, 2020

4.1.5.2 Falmouth Export Cable Landfall Locations

The three landfall locations in the Falmouth Onshore Project Area assessed in this report (see Section 2.2) have very similar cover types and natural communities. Each landing location consists of a coastal beach community habitat (with or without a coastal dune community) bordered by developed land.

The coastal beach habitat at the three potential landfall locations is heavily used during the summer months for recreation by residents and tourists, with paved parking lot areas for automobiles located immediately

adjacent to the beach areas. Landfall construction using HDD is being evaluated to reduce or eliminate effects to the sensitive shoreline environments and nearshore areas of the Massachusetts coast.

Worcester Avenue Landfall (Preferred)

The natural communities at this landfall are of lower ecological value than other communities, largely consisting of mowed lawns and other areas common to human disturbance and presence. The landfall and HDD equipment setup location at Worcester Avenue will be located within a large, municipal-owned grassy median strip with maintained lawn grass located between the one-way roads of Worcester Avenue and north of Grand Avenue. At this location, a short seawall with a sidewalk on top serves as the landward limit of Falmouth Heights Beach. Land immediately north of the beach has been significantly developed for parking areas, public roadways, residential homes, and a hotel and resort.

Shore Street Landfall (Alternate)

The Shore Street alternate landfall location is largely developed and devoid of natural communities. HDD equipment will be staged within the paved parking lot area for the public beach located at the intersection of Shore Street and Surf Drive. The beach at this location ends at a short seawall, which is bordered by a paved parking lot area and Surf Drive. Development for residential homes is located north of Surf Drive.

Central Park Landfall (Alternate)

Located a little over 700 feet (213 m) to the west of the Worcester Avenue landfall, the landfall location at Central Park provides an alternate landfall option along Grand Avenue to the Worcester Avenue landfall site. Central Park is a well-manicured, landscaped public park owned by the Town of Falmouth and used for community sports. The park itself comprises approximately 4.24 acres (1.72 ha) and is surrounded by commercial restaurants and residential areas on all sides. South of the park across Grand Avenue is the Town-owned Falmouth Heights Beach and a restaurant.

4.1.5.3 Falmouth Onshore Export Cables

Once the offshore export cables have made landfall, Mayflower Wind will install the onshore export cables underground within area roadway layouts or other disturbed areas to complete the connection to the onshore substation.

None of the onshore export cable routes will affect substantial areas of natural habitat or vegetation communities. Some previously disturbed areas of maintained roadside vegetation may be affected during construction, dependent upon workspace requirements for equipment. For the purposes of this report, a 40-ft (12-m) wide corridor centered on the underground routes was used to estimate the affected area and determine the natural community types and vegetation resources present (Table 4-1).

The anticipated vegetation clearing will be minimal (e.g., 0.5 acres [0.2 hectares] or less) for the onshore export cable route.

The preferred onshore export cable route in Falmouth is the Worcester Avenue Route while the alternate routes include the Shore Street Route (eastern and western options) and the Central Park Route. These segments travel from landfall locations to the preferred Lawrence Lynch substation location. The onshore export cable route continues from Lawrence Lynch to the Cape Cod Aggregates site. Where the routes follow existing roadway layouts, the proposed duct bank will be installed beneath pavement or in the shoulder adjacent to pavement. Installation within the disturbed road ROW will largely avoid natural communities mapped within this corridor.

Table 4-1 provides a summary of the vegetation types along the Falmouth onshore export cable routes (preferred and alternates). Descriptions of these communities and the vegetation that comprise them are included above in Section 4.1.3. The areas included in Table 4-1 are a conservative estimate of the natural community types and vegetation resources within the route. It is anticipated that direct effects on sensitive environmental resources, such as wetlands, will be avoided to the maximum extent practicable during the detailed design, engineering, and construction of the Project. As such, the area of natural community types ultimately altered by the route is anticipated to be less than that listed in the table.

Based on this analysis and review of aerial photography and available MassGIS data, the following natural communities are present along the onshore export cable route in Falmouth:

Worcester Avenue Route (Preferred)

The areas of likely disturbance consist of the following communities: Bare Land; Deciduous Forest; Developed Open Space; Evergreen Forest; Grassland; Impervious; Palustrine Aquatic Bed; Palustrine Forested Wetland; Palustrine Scrub/Shrub Wetland; and Scrub/Shrub. Bare Land, Developed Open Space and Impervious surface encompasses 77.3 percent of the community types.

Shore Street Route Eastern Option (Alternate)

The areas of likely disturbance consist of the following communities: Bare Land; Deciduous Forest; Developed Open Space; Evergreen Forest; Grassland; Impervious; and Scrub/Shrub. Bare Land, Developed Open Space and Impervious surface encompasses 79.5 percent of the community types.

Shore Street Route Western Option (Alternate)

The areas of likely disturbance consist of the following communities: Bare Land; Deciduous Forest; Developed Open Space; Evergreen Forest; Grassland; Impervious; Palustrine Emergent Wetland; Palustrine Forested Wetland; and Scrub/Shrub. Bare Land, Developed Open Space and Impervious surface encompasses 79.8 percent of the community types.

Central Park Route (Alternate)

The areas of likely disturbance consist of the following communities: Bare Land; Deciduous Forest; Developed Open Space; Evergreen Forest; and Impervious. Bare Land, Developed Open Space and Impervious surface encompasses 86.8 percent of the community types.

Lawrence Lynch to Cape Cod Aggregates Route (Alternate)

The areas of likely disturbance consist of the following communities: Bare Land; Deciduous Forest; Developed Open Space; Evergreen Forest; Grassland; Impervious; Palustrine Forested Wetland; Scrub/Shrub; and Water. Bare Land, Developed Open Space and Impervious surface encompasses 61.9 percent of the community types.

Paper Road – Thomas B Landers Road Deviation Route (Alternate)

The areas of likely disturbance consist of the following communities: Bare Land; Deciduous Forest; Developed Open Space; Evergreen Forest; Grassland; Impervious; and Scrub/Shrub. Bare Land, Developed Open Space and Impervious surface encompasses 54.9 percent of the community types.

4.1.5.4 Falmouth Onshore Substations

Lawrence Lynch (Preferred)

The Lawrence Lynch site consists predominantly of disturbed or developed land. Figure 4-2 shows that almost 80 percent of the area is Bare Land or Impervious surface. Disturbed land, including Bare Land, at this site has been significantly altered from its original state by sand and gravel mining or associated construction activities. Developed land, including Impervious surface, consists of paved areas and constructed buildings. Field reviews of this site confirmed the land disturbance and showed large areas of bare earth containing only opportunistic vegetation. There are several constructed stormwater ponds on the site for management of stormwater runoff. These areas are not considered a valuable resource for wildlife, fish, or other aquatic life due to their highly altered nature and function as stormwater management facilities. In addition, there is an

isolated wetland onsite which is likely to be exempt[2] from state and federal permitting, but could be regulated under Falmouth laws.

Cape Cod Aggregates (Alternate)

The Cape Cod Aggregates site being evaluated for potential siting of the onshore substation consists of a portion of an existing sand and gravel pit located immediately north of Thomas B. Landers Road in Falmouth and abutting the existing transmission operator overhead electric transmission line ROW. The site consists predominantly of disturbed land, having been previously cleared and currently in use for sand and gravel mining and processing. The site is classified as over 40 percent Bare Land and approximately 8 percent forested land (Deciduous Forest and Evergreen Forest). This site includes areas of mature Pitch Pine-Oak Forest around the perimeter, as well as margins of previously cleared land that is in the process of naturally revegetating to a forested cover type. See Table 4-1 for the size of natural community types present on the Cape Cod Aggregates site. The land area presented in Table 4-1 is the overall size of the property and not the limits of disturbance.

Vegetation clearing for construction of an onshore substation will be minimal for the preferred Lawrence Lynch location and the alternate Cape Cod Aggregates site.

4.1.5.5 Falmouth Underground Transmission Route (alternate)

An alternate underground transmission route will be built if the onshore substation is built on the Cape Cod Aggregates site and the preferred overhead transmission line is not built to connect the onshore substation to the Falmouth POI. The 2.1-mile (3.4-km) alternate underground transmission route will exit the Cape Cod Aggregates substation site and follow Thomas B Landers Road east to Geggatt Road to the intersection of Sam Turner Road. The route then follows Sam Turner Road northwest to the Falmouth POI. The route will be located underground along the existing roadways, using previously disturbed and maintained areas for the installation of the underground export cable.

Table 4-1 provides a summary of the vegetation types along the alternate underground transmission route. A 100-ft (30-m) wide corridor centered on the alternate underground transmission route was used to estimate the land cover types and vegetation communities present along the route.

Based on this analysis and review of aerial photography, the following natural communities are present along the alternate underground transmission route: Bare Land; Deciduous Forest; Developed Open Space; Evergreen Forest; Grassland; Impervious; Palustrine Aquatic Bed; Palustrine Forested Wetland; and Water. Bare Land, Developed Open Space and Impervious encompass 36.5 percent while Deciduous and Evergreen Forest are 51.4 percent of the community types.

4.1.5.6 Point of Interconnection (Falmouth Switching Station)

The proposed Falmouth POI to the regional transmission system is an existing switching station (Falmouth Tap). Mayflower Wind anticipates that upgrades to Falmouth Tap will be undertaken by Eversource, as part of a larger reliability project, which is independent of the Mayflower Wind Project. Based on the land use analysis, the following natural communities are present at the Falmouth POI: Bare Land; Deciduous Forest; Evergreen Forest; Grassland; and Impervious. Grassland encompasses 55 percent of the land cover; however, this area may include previously disturbed land. Bare Land (28.8 percent) also contributes to a large percentage of the land use type.

4.1.5.7 Brayton Point Onshore Project Area

Table 4-2 provides the approximate percentage and acreage of natural communities, as well as wetlands and vernal pool data, present within the immediate vicinity of the Brayton Point Onshore Project Area with the potential to be directly affected by construction, operation, and decommissioning activities (i.e., within a 40 ft wide [12 m wide] corridor centered on the landfall and underground export cable and transmission routes;

[2] The site is disturbed and although the wetland is currently isolated, regulatory review may conclude the wetland is adjacent to a Water of the U.S.

within a 100 ft wide [30 m wide] corridor for the underground transmission route, and within the HVDC converter station site).

Table 4-2. Natural Communities Within the Brayton Point Onshore Project Area

Land Use / Natural Community	Acres	Hectares	Percentage of Total Land Area
Aquidneck Island Onshore Export Cables (40-ft [12-m] corridor)			
Route Option 1			
Beaches	0.042	0.017	0.3
Cultivated	0.988	0.400	7.1
Developed Open Space	9.835	3.980	70.8
Forested Area	1.498	0.606	10.8
Scrub/Shrub	0.569	0.230	4.1
Vacant Land	0.281	0.114	2.0
Wetland	0.682	0.276	4.9
Total	**13.895**	**5.623**	**100.0**
Route Option 2			
Beaches	0.141	0.057	1.0
Cultivated Land	0.017	0.007	0.1
Developed Open Space	4.788	1.937	34.0
Forested Area	1.429	0.578	10.2
Scrub/Shrub	0.019	0.008	0.1
Vacant Land	0.642	0.260	4.6
Wetland	7.042	2.850	50.0
Total	**14.079**	**5.697**	**100.0**
Route Option 3			
Beaches	0.040	0.016	0.2
Developed Open Space	11.127	4.503	60.9
Forested Area	1.399	0.566	7.7
Scrub/Shrub	0.064	0.026	0.3
Vacant Land	1.052	0.426	5.8
Water	0.017	0.007	0.1
Wetland	4.564	1.847	25.0
Total	**18.262**	**7.390**	**100.0**
Brayton Point Landfall Locations (40-ft [12-m] corridor)			
Western Landfall (Preferred)			
Impervious	1.300	0.526	66.0
Bare Land	0.006	0.002	0.3
Developed Open Space	0.531	0.215	26.9

Land Use / Natural Community	Acres	Hectares	Percentage of Total Land Area
Deciduous Forest	0.070	0.028	3.5
Water	0.065	0.026	3.3
Total	**1.971**	**0.798**	**100.0**
Eastern Landfall (Alternate)			
Bare Land	0.047	0.019	1.6
Deciduous Forest	0.053	0.022	1.8
Developed Open Space	0.513	0.208	17.3
Grassland	0.223	0.090	7.5
Impervious	2.118	0.857	71.5
Scrub/Shrub	0.104	0.042	3.5
Water	0.128	0.052	4.3
Total	**2.964**	**1.200**	**100.0**
Brayton Point Onshore Export Cable Routes (40-ft [12-m] corridor)			
Brayton Point (Preferred)			
Bare Land	0.005	0.002	0.3
Deciduous Forest	0.0001	0.0004	0.0
Developed Open Space	0.068	0.027	3.4
Impervious	1.924	0.779	95.5
Water	0.018	0.007	0.9
Total	**2.016**	**0.816**	**100.0**
Brayton Point (Alternate)			
Bare Land	0.003	0.001	0.2
Deciduous Forest	0.008	0.003	0.5
Developed Open Space	0.142	0.057	8.9
Grassland	0.116	0.047	7.2
Impervious	1.210	0.490	75.6
Scrub/Shrub	0.070	0.028	4.3
Water	0.051	0.021	3.2
Total	**1.600**	**0.647**	**100.0**
HVDC Converter Station			
Developed Open Space	12.436	5.033	27.9
Impervious	28.746	11.633	64.4
Scrub/Shrub	0.564	0.288	1.3
Water	2.899	1.173	6.5
Total	**44.644**	**18.067**	**100.0**

Land Use / Natural Community	Acres	Hectares	Percentage of Total Land Area
Underground Transmission Route (40-ft [12-m] corridor)			
Developed Open Space	0.007	0.003	1.0
Grassland	0.024	0.010	3.5
Impervious	0.556	0.255	81.6
Scrub/Shrub	0.095	0.038	13.9
Total	**0.682**	**0.276**	**100.0**

Data sources: MassGIS, 2018a; MassGIS, 2018b; MassGIS, 2019a; MassGIS, 2020; RIGIS, 1993, RIGIS 2021

4.1.5.8 Onshore Export Cables over Aquidneck Island

An onshore export cable route crosses Aquidneck Island, using existing ROWs before the Brayton Point ECC crosses Mount Hope Bay and makes landfall at Brayton Point. This area is predominantly developed land. There are three route options. RIGIS open data source was used for this analysis (RIGIS Land Use and Land Cover [2011] dataset). Based on this analysis the following natural communities are present along the onshore export cable route on Aquidneck Island:

Route Option 1

The areas of likely disturbance consist of the following communities: Beaches; Cultivated; Developed Open Space; Forested Area; Scrub/Shrub; Vacant; and Wetland. Developed Open Space encompasses 70.8 percent while Wetlands encompass 4.9 percent of the community types.

Route Option 2

The areas of likely disturbance consist of the following communities: Beaches; Cultivated Land, Developed Open Space; Forested Area; Scrub/Shrub; Vacant Land; and Wetland. Developed Open Space encompasses 34.0 percent of the community types; Wetland is 50.0 percent.

Route Option 3

The areas of likely disturbance consist of the following communities: Beaches; Developed Open Space; Forested Area; Scrub/Shrub; Vacant Land; Water; and Wetland. Developed Open Space encompasses 60.9 percent of the community types; Wetland is 25.0 percent.

4.1.5.9 Brayton Point Landfall Locations

The Brayton Point landfall locations, western (preferred) and eastern (alternate) are both located at the site of a decommissioned power plant (Brayton Point Power Station). Landfall construction using HDD is being evaluated to reduce or eliminate effects to the sensitive shoreline environments and nearshore areas of the Massachusetts coast.

Western Landfall (Preferred)

The areas of likely disturbance are generally devoid of natural communities as they consist of roads and former industrial uses. When the corridor footprint is overlaid on the public data set MassGIS 2016 Land Cover/ Land Use, the footprint area includes the following communities: Developed Open Space; Impervious Surfaces; Bare Land; Deciduous Forest, and water. Within the 1.971 acres, 93.2 percent of the area consists of Bare Land, Developed Open Space, and Impervious cover types.

Eastern Landfall (Alternate)

Similar to the western landfall, the areas of likely disturbance are generally devoid of natural communities as they consist of former industrial uses. When the corridor footprint is overlaid on the public data set MassGIS 2016 Land Cover/ Land Use, the footprint area includes the following communities: Developed Open Space;

Impervious Surfaces; Bare Land; Scrub/Shrub, Grassland, Deciduous Forest, and water. Within the 2.964 acres, 90.4 percent of the area consists of Bare Land, Developed Open Space, and Impervious cover types.

4.1.5.10 Brayton Point Onshore Export Cables

The Brayton Point landfall locations, western (preferred) and eastern (alternate) are both located at the site of a decommissioned power plant (Brayton Point Power Station). Once making landfall at Brayton Point, the onshore export cable route travels to the HVDC converter station. From the converter station, the underground transmission route will connect to the POI at the existing National Grid substation.

None of the onshore export cable routes will affect substantial areas of natural habitat or vegetation communities. Some previously disturbed areas of maintained roadside vegetation may be affected during construction, dependent upon workspace requirements for equipment. For the purposes of this report, a 40-ft (12-m) wide corridor centered on the underground routes was used to estimate the affected area and determine the natural community types and vegetation resources present (Table 4-2).

The anticipated vegetation clearing will be minimal (e.g., 0.5 acres [0.2 hectares] or less) for the onshore export cable route.

Brayton Point (Preferred)

The areas of likely disturbance consist of the following communities: Bare Land; Deciduous Forest; Developed Open Space; Impervious; Unconsolidated Shore; Impervious; and Water. Impervious encompasses 95.5 percent of the community types.

Brayton Point (Alternate)

The areas of likely disturbance consist of the following communities: Bare Land; Deciduous Forest; Developed Open Space; Grassland; Impervious; Scrub/Shrub; and Water. Developed Open Space, Grassland and Impervious encompass 91.7 percent of the community types.

Brayton Point HVDC Converter Station

As shown in Table 4-2, there are four cover types identified within the site: Developed Open Space, Impervious, Scrub/Shrub, and Water. Combined, developed open space and impervious comprise 92.3 percent of the land cover type. Use of this site would result in very limited, if any, environmental impacts. For 50 years, Brayton Point was home to a 1,493 megawatt coal-fired power plant that generated electricity to local homes and businesses before being decommissioned in 2017. The property includes a 700 ft (213 m) quay accessible from a privately-maintained channel. Onsite facilities included the power generation building, two cooling towers (500 ft tall), high voltage transmission lines, large coal yard, and ash storage facility (Massachusetts Clean Energy Center, 2021). Brayton Point's proximity to offshore wind energy tracts in the Atlantic Ocean, a deep water port, access to major highway transportation, and public support for energy diversification make it an ideal location to support the transition to offshore wind energy (Brayton Point LLC, 2021).

Brayton Point Underground Transmission Routes

The Brayton Point underground transmission route is a new 345-kV underground transmission line that will run approximately 1.120 ft in length from the HVDC converter station to the Brayton Point POI at the National Grid substation on the Brayton Point property. The site, a decommissioned power plant, consists of the following cover types: Developed Open Space; Grassland; Impervious; and Scrub/Shrub. Scrub/Shrub and Impervious cover are 95.5 percent, with Impervious alone encompassing 81.6 percent of the land surface.

4.2 Wildlife Resources

Wildlife species may inhabit one or more of the natural communities identified in the Section 4.1. Often the level of development and anthropogenic disturbance/perturbations limits which individual species may be found in a natural community. Within the Onshore Project Areas for both Falmouth and Brayton Point, the natural communities fall into the following three general classifications for wildlife habitats:

- Urban/Developed Habitats have limited vegetative coverage, high amounts of impervious and routinely disturbed surfaces, and are of low ecological value. Species associated with these habitats are those common to urban areas (e.g., squirrels, house sparrows, rodents, etc.). The Lawrence Lynch site and the converter station site at Brayton Point are examples of Urban Developed Habitat.

- Suburban/Fragmented Habitats are areas that have a degree of anthropogenic disturbance and have a level of vegetative or open water and wetland coverage to support a variety or organisms common to a suburban environment. Some of these habitats could, if conditions permitted, be used as a habitat resource by a threatened or endangered species. Table 4-3 identifies some typical species common to Suburban/Fragmented Habitats.

- Undisturbed/Limited Disturbance Habitats are large swaths of contiguous vegetated parcels and/or surface waters that have limited anthropogenic disturbances. The large forested tracts in the western portion of Joint Base Cape Cod (JBCC) located north of the Falmouth Onshore Project Area are an example of this type. This habitat will accommodate the species listed in Table 4-3, but also a host of other species, especially species that prefer unfragmented habitats (e.g., scarlet tanager, wood thrush). In the discussion below, information on known resources for JBCC are provided as examples of species in Undisturbed/Limited Disturbance Habitats.

Table 4-3. Representative Wildlife in the Onshore Project Areas

Common Name	Scientific Name	Habitat
	Mammals	
Opossum	*Didelphis virginiana*	Forest and open woodlots
Gray squirrel	*Sciurus carolinensis*	Forest and open woodlots
Meadow vole	*Microtus pennsylvanicus*	Grasslands
White-footed mouse	*Peromyscus leucopus*	Grasslands
Big brown bat	*Eptesicus fuscus*	Forests
Northeastern coyote	*Canis latrans*	Forest and open woodlots
Striped skunk	*Mephitis*	Forest and open woodlots
Raccoon	*Procyon lotor*	Forests and open woodlots
White-tailed deer	*Odocoileus virginianus*	Forest and open woodlots
	Birds	
Tree swallow	*Tachycineta bicolor*	Ponds and lakes
Common starling	*Sturnus vulgaris*	Developed areas
American robin	*Turdus migratorius*	Open woodlots
American crow	*Corvus brachyrhynchos*	Open woodlots
Mourning dove	*Zenaida macroura*	Open woodlots
Red-winged blackbird	*Agelaius phoeniceus*	Wetlands
American goldfinch	*Spinus tristis*	Open woodlots
Chipping sparrow	*Spizella passerina*	Open woodlots
Dark-eyed junco	*Junco hyemalis*	Forests

Common Name	Scientific Name	Habitat
Blue jay	*Cyanocitta cristata*	Forests
Black-capped chickadee	*Poecile atricapillus*	Forests
Seaside Sparrow	*Ammodramus maritimus*	Marshes
Gadwall	*Anas strepera*	Wetlands
Great Egret	*Ardea alba*	Wetlands
Cattle Egret	*Bubulcus ibis*	Marshes, farms
Piping plover	*Charadrius melodus*	Coastal Beaches
Little Blue Heron	*Egretta caerulea*	Marshes and Estuaries
Snowy Egret	*Egretta thula*	Marshes, shorelines, and ponds
American Oystercatcher	*Haematopus palliatus*	Coastal beaches
Least bittern	*Ixobrychus exilis*	Marshes
Black-crowned Night Heron	*Nycticorax*	Wetlands
Least tern	*Sterna antillarum*	Coastal estuaries and bays
Glossy Ibis	*Plegadis falcinellus*	Marshes
Barn owl	*Tyto alba*	Deserts, grasslands, forests, agricultural fields and urban areas
Reptiles		
Painted turtle	*Chrysemys picta*	Ponds and lakes
Spotted turtle	*Clemmys guttata*	Ponds and lakes
Eastern Box Turtle	*Terrapene carolina carolina*	Grasslands, wet meadows, Open Woodlands and Forest Edges
Eastern ribbon snake	*Thamnophis sauritus*	Wetlands
Northern water snake	*Nerodia sipedon*	Wetlands
Northern ring-necked snake	*Diadophis punctatus*	Open woodlots
Black racer	*Coluber constrictor*	Open woodlots
Amphibians		
Grey treefrog	*Hyla versicolor*	Wetlands
Spring peeper	*Pseudacris crucifer*	Ponds and lakes
Green frog	*Rana clamitans*	Wetlands
American bullfrog	*Lithobates catesbeianus*	Ponds and lakes
Spotted salamander	*Ambystoma maculatum*	Wetlands
Eastern red-backed salamander	*Plethodon cinereus*	Wetlands
Fowler’s toad	*Anaxyrus fowleri*	Open woodlots
Fish		
Yellow perch	*Perca flavescen*	Ponds and lakes
Largemouth bass	*Micropterus salmoides*	Ponds and lakes
Chain pickerel	*Esox niger*	Ponds and lakes
Black crappie	*Pomoxis nigromaculatus*	Ponds and lakes
Bluegill	*Lepomis macrochirus*	Ponds and lakes
Pumpkinseed	*Lepomis gibbosus*	Ponds and lakes

Common Name	Scientific Name	Habitat
	Invertebrates	
Beach-dune Tiger beetle	*Cicindela hirticollis*	Coastal beaches
Salt Marsh Tiger beetle	*Ellipsoptera marginata*	Marshes

Sources eBird, 2020; National Park Service (NPS), 2013a; NPS, 2013b, Jordan 2021

Wildlife in the Onshore Project Areas are grouped into the following groups: mammals, avian species (birds), amphibians and reptiles, fish, and invertebrates. The sections below provide a brief description of the wildlife resources in the Onshore Project Areas. More common and disturbance-tolerant species are found in Urban and Suburban Habitats and a larger variety of species are identified in undisturbed habitats.

4.2.1 Mammals

Forty-three species of terrestrial mammals have geographic ranges that include the eastern portion of Massachusetts and Rhode Island (DeGraaf and Rudis, 1983).

Surveys of Camp Edwards on JBCC, located north of the Falmouth Onshore Project Area, estimate at least 30 species of mammals are inhabiting the area, the most common of which is the white-footed mouse. Of the species that have been directly surveyed, there are 10 species of small mammals, 10 species of medium sized mammals, and two species of large mammals, identified as the eastern coyote and white-tailed deer. Four species of bats have also been directly surveyed. Surveys identified that mammals prefer the mixed woodlots on the site, while they tend to avoid disturbed areas. White-tailed deer are an important recreational hunting species in the area and Camp Edwards allows an annual hunting season for white-tailed deer to occur as a method of population management for this species within the military installation boundaries (Massachusetts Army National Guard [MARNG], 2009). Deer, squirrels, raccoons, weasels, and bats are also among the most common Rhode Island mammal species. Statewide monitoring of hunting and trapping of game species provides harvest data that aids in calculating population sizes and identify the presence of new species for conservation and management.

4.2.2 Avian Species

4.2.2.1 Species Diversity

Due to the variety of terrestrial and aquatic habitats within the Onshore Project Areas, and their location within the Atlantic Flyway[3], Upper Cape Cod and Eastern Rhode Island both support a diversity of avian species that use the variety of landforms, habitats, and vegetative communities. Species usage include year-round residents, migratory species, and summer residents. The variety of upland, wetland, and coastal habitats (Figure 4-2 through Figure 4-8) would provide resources for numerous bird species. For instance, Camp Edwards, located just north of the Falmouth Onshore Project Area, has reported the sightings of 105 species (MARNG, 2009). The species include a variety of passerines, waterfowl, raptors. Any habitat, including urban landscapes, could serve as a resource for avifauna. The number of individuals and species presence would vary depending on the cover type, time of year and/or presence of anthropogenic perturbances.

4.2.2.2 Avifauna and Hunting

Falmouth Onshore Project Area

There are several upland game birds and waterfowl that provide recreational hunting within the Falmouth Onshore Project Area. Ring-necked pheasant (*Phasianus colchicus*), northern bobwhite (*Colinus virginianus*), and wild turkey (*Meleagris gallopavo*) are hunted within upland areas, while a variety of waterfowl including mallard, American black duck (*Anas rubripes*), Canada goose (*Branta canadensis*), and wood ducks provide

[3] The Atlantic Flyway is a major north-south migratory corridor located along the eastern U.S. The flyway starts in Greenland and Canadian Maritime Provinces and is roughly bounded by the Appalachian Mountains to the west and the Atlantic Ocean to the east. The flyway terminates in the Caribbean and Central/South America.

sporting opportunities within coastal and freshwater aquatic habitats. The Massachusetts Division of Fisheries and Wildlife (DFW) developed and implemented a wild turkey reintroduction program beginning in 1972. Between 1979 and 1996, 561 turkeys were released throughout the Commonwealth. The DFW successfully reintroduced wild turkey to the forests of Camp Edwards north of the Falmouth Onshore Project Area, one of the two locations on Cape Cod where turkeys were released.

The Project also passes in proximity to the Frances A. Crane Wildlife Management Area, which is located just south of JBCC. The management area provides hunting opportunities for most game animals, including an emphasis on upland game birds. The wildlife management area is stocked with ring-necked pheasant.

Brayton Point Onshore Project Area

RIDEM provides seasonal permits for turkey, deer, and bear hunting. Along the Brayton Point onshore export cable, the Project passes through developed land across Aquidneck Island where hunting is restricted (RIDEM, 2021).

There are no Massachusetts Wildlife Areas located near the Brayton Point landfall area (MassWildlife, 2021), and the Town of Somerset (2005) does not allow hunting on municipal land. Therefore, recreational hunting is not permitted at or around this site.

4.2.3 Reptiles and Amphibians

A total of 36 species of reptiles and amphibians are found within the eastern half of Massachusetts and Rhode Island. These include nine species of salamanders, seven species of turtles, 10 species of frogs, and 10 species of snakes (DeGraaf and Rudis, 1981). Many of these amphibians depend upon ephemeral wetlands, commonly called vernal pools, for breeding, egg laying, egg and embryo development, and juvenile development.

Twenty-seven species of reptiles and amphibians are considered “species of concern” in Rhode Island. Populations of such species are low or their habitat may be threatened. Among these species are reptiles such as the eastern box turtle, the eastern hognose snake, and the eastern ribbon snake; and amphibians such as the eastern spadefoot toad and the northern leopard frog (RIDEM, 2021). Many of these species rely on forests, freshwater wetlands and vernal pools. The Brayton Point Onshore Project Area is highly urbanized. As such, only species which have adapted to living in urban environments would likely utilize the Onshore Project Areas.

4.2.4 Fish

Some perennial freshwater aquatic habitat exists within the Falmouth Onshore Project Area, including Sols Pond. These water bodies may provide habitat for warmwater fish species, such as yellow perch (*Perca flavescens*), largemouth bass (*Micropterus salmoides*), chain pickerel (*Esox niger*), black crappie (*Pomoxis nigromaculatus*), bluegill (*Lepomis macrochirus*), pumpkinseed (*Lepomis gibbosus*), and various smaller minnows and forage fish.

Coldwater fisheries, including those that support brook trout (*Salvelinus fontinalis*), are present on Cape Cod. However, according to areas mapped on the MassGIS (MassGIS, 2019b) for coldwater fisheries, there are no mapped coldwater fisheries within the Onshore Project Areas.

As previously mentioned, the Rhode Island portion of the Brayton Point Onshore Project Area is largely urban environment. There are no mapped coldwater fisheries within the vicinity of the onshore export cable route which crosses through Aquidneck Island, in Portsmouth, Rhode Island and at Brayton Point in Somerset. Massachusetts.

4.2.5 Invertebrates

Invertebrates are a broad classification of animals that includes insects, arachnids, arthropods, mollusks, and crustaceans. Several specific subclassifications have been studied extensively within the Onshore Project Areas as they are either unique or sensitive. Cape Cod serves as a habitat resource for hundreds of species;

in fact, surveys within the Camp Edwards area north of the Onshore Project Area identified 528 species of moths and butterflies.

Dragonflies and damselflies are known to occur within freshwater aquatic habitats occurring near the Falmouth Onshore Project Area. These species depend on perennial deepwater habitat such as ponds and inundated marshes for larval development and will use a variety of terrestrial and wetland habitats during adulthood for foraging and mating. Thousands of species invertebrates are likely to exist in Rhode Island, but only about 400 species have been recorded in Rhode Island's Natural Heritage Database. Several species of beetles, butterflies, moths, dragonflies, and damselflies are listed as species of concern in Rhode Island (RIDEM, 2021). Through correspondence with RIDEM, two threatened species of beetle were determined to occur within the Brayton Point Onshore Project Area (RIDEM, 2021).

4.3 Summary of Vegetation and Wildlife in the Onshore Project Areas

Table 4-4 and Table 4-5 identify each Project component and the respective habitats in the Falmouth Onshore Project Area and the Brayton Point Onshore Project Area, respectively.

Table 4-4. Anticipated Wildlife Resources in the Falmouth Onshore Project Area

Site	Component	Classification	Wildlife
Landfall Locations	Worcester Avenue	Site is largely Urban/Developed	Site will only be used by those species adapted to urban environments
	Shore Street	Site is largely Urban/Developed	Site will only be used by those species adapted to urban environments
	Central Park	Site is largely Urban/Developed	Site will only be used by those species adapted to urban environments
Onshore Export Cables		Site is largely Urban/Developed with minor Suburban/Fragmented areas	Site will only be used by those species adapted to urban environments
Onshore Substation	Lawrence Lynch	Site is Largely Urban/Developed	Site will only be used by those species adapted to urban environments
	Cape Cod Aggregates	Site is Largely Urban/Developed	Site will only be used by those species adapted to urban environments
Onshore Export Cable Route (alternate) to Cape Cod Aggregates site (alternate)		Some Undisturbed with large amounts of Urban	The small pockets of natural areas will serve as a resource to species that thrive in edge environments.
Underground Transmission Route from Alternate Substation		Some Undisturbed with large amounts of Urban/Developed areas	The small pockets of natural areas will serve as a resource to species that thrive in edge environments.
POI	Falmouth Tap	Site is largely Urban/Developed	Site will only be used by those species adapted to urban environments.

Table 4-5. Anticipated Wildlife Resources in the Brayton Point Onshore Project Area

Site	Component	Classification	Wildlife
Landfall Locations	Western landfall (preferred)	Site is largely Urban/Developed	Site will only be used by those species adapted to urban environments
	Eastern landfall (alternate)	Site is largely Urban/Developed	Site will only be used by those species adapted to urban environments
Onshore Export Cables (Aquidneck Island)	Aquidneck Island	Site is largely Urban/Developed with some wetland areas adjacent to roads and maintained recreational areas (golf courses)	Site will largely be used by those species adapted to urban environments
HVDC Converter Station, Onshore Export Cables, and Underground Transmission Route		Site is largely Urban/Developed	Site will only be used by those species adapted to urban environments

4.4 Protected Species

Species designated as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) or the National Oceanic and Atmospheric Administration are federally protected under the Endangered Species Act of 1973 (ESA), as listed in 50 Code of Federal Regulations (CFR) 17.11(h). Under Section 7 of the ESA, federal agencies must consult with the USFWS to ensure that federal actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of a federally threatened or endangered species. Additional federal regulations protect subsets of species such as migratory birds. These regulations include the Bald and Golden Eagle Protection Act (16 United States Code [USC] 668-668c) and the Migratory Bird Treaty Act (MBTA; 16 USC 703-712).

The Commonwealth of Massachusetts also protects rare and sensitive species through the Massachusetts Endangered Species Act (MESA). This act is designed to: 1) protect rare species and their habitats by prohibiting the “take” of species listed as endangered, threatened, or special concern; 2) establish procedures for the listing and protection of rare species; 3) outline project review filing requirements for activities within Priority Habitats of Rare Species (Priority Habitats); and 4) provide review timelines and establish an appeal process for agency actions. Massachusetts administers protections for rare and sensitive species under the MESA through the NHESP and through periodically updated state-wide mapping of Priority Habitats, Estimated Habitats of Rare Wildlife (Estimated Habitats), and Priority Natural Communities. Projects proposed within Priority or Estimated Habitats and surpassing certain disturbance thresholds require review and authorization by the NHESP prior to commencement of construction.

Per Rhode Island’s General Law 20-37-2, RIDEM is responsible for approving lists of plant and animal species that are of conservation interest in Rhode Island. Rhode Island is home to several rare plants and animals, which hold both state and federal listings. The State’s ESA protects those species identified and helps to prioritize areas of concern for protection efforts and is designed to maintain a high-quality environment as well as forbid the sale, possession etc. of plants and animals considered by the U.S. Secretaries of the Interior or Commerce to be under the provisions of the Federal Endangered Species Act of 1973.

Protected terrestrial species identified by the USFWS, NHESP, and RIDEM as potentially occurring in the vicinity of the Project are detailed below.

4.4.1 Federally-Protected Species

4.4.1.1 Federally Protected Species – Falmouth Onshore Project Area

The federal ESA protects listed species under 50 CFR 17.11(h). Under Section 7 of the ESA, federal agencies must consult with the USFWS to ensure that federal actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of a federally threatened or endangered species, or result in the destruction or modification of their designated Critical Habitats.

Data received using the USFWS' Information for Planning and Consultation (IPaC) system on August 5, 2021 identified three species, northern long-eared bat, roseate tern, and American chaffseed as potentially occurring in the Falmouth Onshore Project Area (Table 4-6). The Falmouth Onshore Project Area IPaC report is provided in Attachment 1.

Table 4-6. Federally Threatened and Endangered Species Potentially Occurring in the Falmouth Onshore Project Area

Group	Common Name	Scientific Name	Federal Status	Preferred Habitat
Birds	Roseate tern	*Sterna dougallii*	Endangered	Coastal beaches and the Atlantic Ocean
Mammals	Northern long-eared bat	*Myotis septentrionalis*	Threatened	Winter – mines and caves; Summer – wide variety of forested habitats
Plants	American chaffseed	*Schwalbea americana*	Endangered	Seasonally wet acidic, sandy or peaty soils

The northern long-eared bat is a medium-sized bat with a total body length of approximately 3.0 to 3.7 inches (7.6 to 9.4 centimeters) and a wingspan of 9 to 10 inches (23 to 25 centimeters). Their fur color can be medium to dark brown on the back and tawny to pale brown on the underside. The species is distinguished by its long ears, which when pushed forward extend at least 0.2 inches (4 millimeters) past its nose (USFWS, 2015). During the winter months, the northern long-eared bat can be found hibernating in caves and mines. They use areas in various sized caves or mines with constant temperatures, high humidity, and no air currents. During the summer, northern long-eared bats roost underneath bark and in cavities or in crevices of both live and dead trees. Individuals of the species have also been found, rarely, roosting in structures like barns and sheds. The northern long-eared bat has been documented as occurring on Camp Edwards on JBCC (MARNG, 2009). However, this species was not identified by the NHESP as occurring in the Falmouth Onshore Project Area (NHESP, 2020a). The northern long-eared bat is assessed in further detail in a separate report (COP Appendix I2, Bat Risk Assessment).

The roseate tern is a medium-sized gull-like tern that is approximately 15 inches (38 centimeters) long and prefers shoreline habitat (USFWS, 2011). The roseate tern is a specialist feeder, eating fish almost exclusively, and feeding by plunge diving. Habitat for the roseate tern includes nesting habitat along sandy shores and barrier islands and under hollows or dense vegetation. The onshore Project activities are not likely to affect the roseate tern due to the minimal anticipated shoreline disturbance from the HDD installation of the export cable landfall.

American chaffseed is a hemiparasitic herbaceous plant that occurs in fire-maintained longleaf pine flatwoods and savannas (USFWS, 2019). It is shade intolerant, dependent on disturbance to provide partly open conditions, and occurs in species-rich plant communities where grasses, sedges, and savanna dicots are present (USFWS, 2019). In Massachusetts, it is found in sandplain grassland communities often dominated by little bluestem grass (NHESP, 2020b). The limited grassland habitat and minimal ground disturbance proposed to construct the onshore Project components makes impact to American chaffseed unlikely.

4.4.1.2 Federally Protected Species – Brayton Point Onshore Project Area

Preliminary data from an information request using the USFWS' IPaC system on June 29, 2021 identified four species, the northern long-eared bat, piping plover, red knot, and the roseate tern, as potentially occurring in

the Brayton Point Onshore Project Area (Table 4-7). The Brayton Point Onshore Project Area IPaC report is provided in Attachment 2.

Table 4-7. Federally Threatened and Endangered Species Potentially Occurring in the Brayton Point Onshore Project Area

Group	Common Name	Scientific Name	Federal Status	Preferred Habitat
Birds	Roseate tern	*Sterna dougallii*	Endangered	Coastal beaches and the Atlantic Ocean
	Piping Plover	*Chaaradrius melodus*	Threatened	Coastal beaches
	Red Knot	*Calidris canutus rufa*	Threatened	Coastal beaches
Mammals	Northern long-eared bat	*Myotis septentrionalis*	Threatened	Winter – mines and caves; Summer – wide variety of forested habitats

See Section 4.4.1.1 above for a brief description of the northern long-eared bat and roseate tern species.

Piping plovers are small, sand colored coastal birds with orange legs and a black band between the eyes and around the neck. They pluck marine worms, crustaceans, and insects from the sand to eat. They breed on coastal beaches and nest in the sand on the high beach close to the dunes (USFWS, 2020).

The red knot is a robin-sized shorebird that makes a long-distance migration of more than 9,300 mi (15,500 km) every year. The red knot changes between a rusty red color and grey depending on time of year. They feed on invertebrates including small clams, mussels, snails, crustaceans, worms, and horseshoe crab eggs. The islands of Massachusetts are important stopover habitats for the red knot during its migration (USFWS, 2021).

4.4.1.3 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668-668c) protects the named species from “takes” or disturbance. This act puts an emphasis on protecting nesting areas. Project activities are not anticipated to have an effect on bald or golden eagles.

Golden eagles are highly migratory and have been seen on Cape Cod at very limited rates, estimated at approximately once-in-thirty years (Faherty, 2016). Bald eagles are known to forage near Cape Cod and typically inhabit areas within 1.0 mi (1.6 km) of large waterbodies where they forage for food. Bald eagles typically nest within the supercanopy, choosing the tallest trees for their large nests. Until the Spring of 2020, a bald eagle nest had not been seen in Barnstable County in over 115 years. However, a new nest was observed on Cape Cod in 2020 and may be attributed to the lack of tourist activity seen during the spring of 2020 due to the COVID-19 pandemic, or simply due to the increasing number of bald eagles in the region (DFW, 2020). This eagle nest is located in the town of Barnstable; no bald eagle nesting sites are located in the Falmouth Onshore Project Area.

Historically, bald eagles were common winter visitors to Rhode Island (Avenego, 2018). But by the 1960s, bald Eagles had disappeared from Rhode Island and during the following three decades, sightings were rare. Recently, a record number of bald eagle sightings (100) were reported in Rhode Island during 2018, 19 of those being on Aquidneck Island (Avenego, 2018). Although populations of bald eagles in Rhode Island have increased, Project activities are not expected to interfere with the species.

The MBTA protects the nesting of migratory birds and prevents the taking of these birds. Informal consultation using IPaC identified 57 bird species within the Falmouth Onshore Project Area that will be protected by the MBTA, 23 of which are also designated as Birds of Conservation Concern (BCC).

4.4.2 State-Protected Species – Agency Mapping and Correspondence

4.4.2.1 Falmouth Onshore Project Area

Some natural communities provide unique habitat required by state-listed rare or protected species for survival and are afforded a protection status as either a Priority Habitat or an Estimated Habitat by the NHESP. A Priority Habitat is defined by the NHESP as the known geographic extent of habitat for all state-listed rare species, including both plants and animals. An Estimated Habitat is a sub-set of Priority Habitat based on the geographic extent of habitat of state-listed rare wetlands wildlife and are protected under the Massachusetts Wetlands Protection Act. These Priority and Estimated Habitats are the subject of species conservation efforts by the NHESP, and crossing these mapped habitats requires consultation with the NHESP.

Mayflower Wind consulted with the NHESP regarding the Priority Habitats and Estimated Habitats crossed by the Project in Falmouth. The location and extent of NHESP-mapped Priority Habitats in the Falmouth Onshore Project Area are shown in Figure 4-15. Estimated Habitats is a sub-set of the Priority Habitats and are based on the geographic extent of habitat of state-listed rare wildlife.

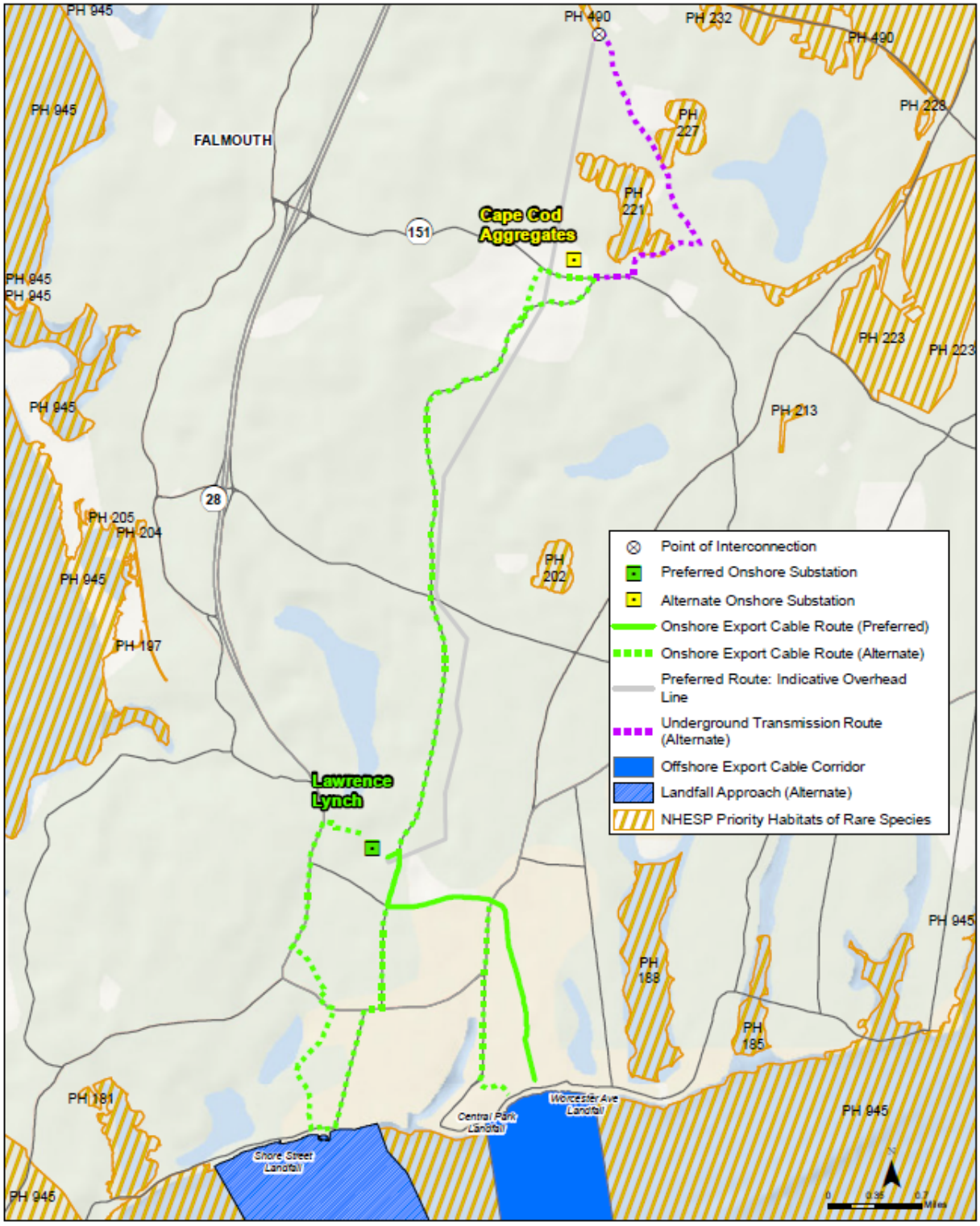
Within or in close proximity to the Falmouth Onshore Project Area, there are four mapped Priority Habitats 221, 227, 490, and 945. Only Priority Habitat 945 is crossed by the Project footprint. The other three Priority habitats are within close proximity to the Project corridor (near the POI) or fall just within the Project corridor (along Sam Turner Rd). As the work along Sam Turner Rd and the Falmouth POI would occur within paved areas or just outside of the mapped Priority Habitat polygons, they are not discussed further. When working in these areas, Mayflower Wind will adhere to all necessary and appropriate best management practices (e.g., sediment and erosion control plans, restriction, if any, on noise and lighting, etc.).

Table 4-8 catalogues the state-listed species known or potentially occurring within identified Priority Habitats and Estimated Habitats crossed by the Falmouth Onshore Project Area (NHESP, 2020a).

Table 4-8. Species Identified within NHESP Priority Habitat and Estimated Habitat within the Falmouth Onshore Project Area

Scientific name	Common Name	Taxonomic Group	State Status
Priority Habitat No. 945 / Estimated Habitat No. 756			
Sterna dougallii	Roseate tern	Bird	Endangered*
Sterna hirundo	Common tern	Bird	Special Concern
Sternula antillarum	Least tern	Bird	Special Concern
Charadrius melodus	Piping plover	Bird	Threatened*
Hydrocotyle verticillata	Saltpond pennywort	Plant	Threatened
Polygonum glaucum	Sea-Beach knotweed	Plant	Special Concern

Source: NEHSP, 2020a



Data source: MassGIS, 2017a and 2017b

Figure 4-15. Location and Extent of NHESP Priority Habitats of Rare Species within the Falmouth Onshore Project Area

4.4.2.2 Brayton Point Onshore Project Area

In correspondence with RIDEM, Mayflower Wind requested information regarding any state-listed rare, threatened, and endangered species and species of greatest conservation need (SGCN) present within the Brayton Point Onshore Project Area. Table 4-9 lists the state-listed species known or potentially occurring within the Brayton Point Onshore Project Area provided by RIDEM (RIDEM, 2021).

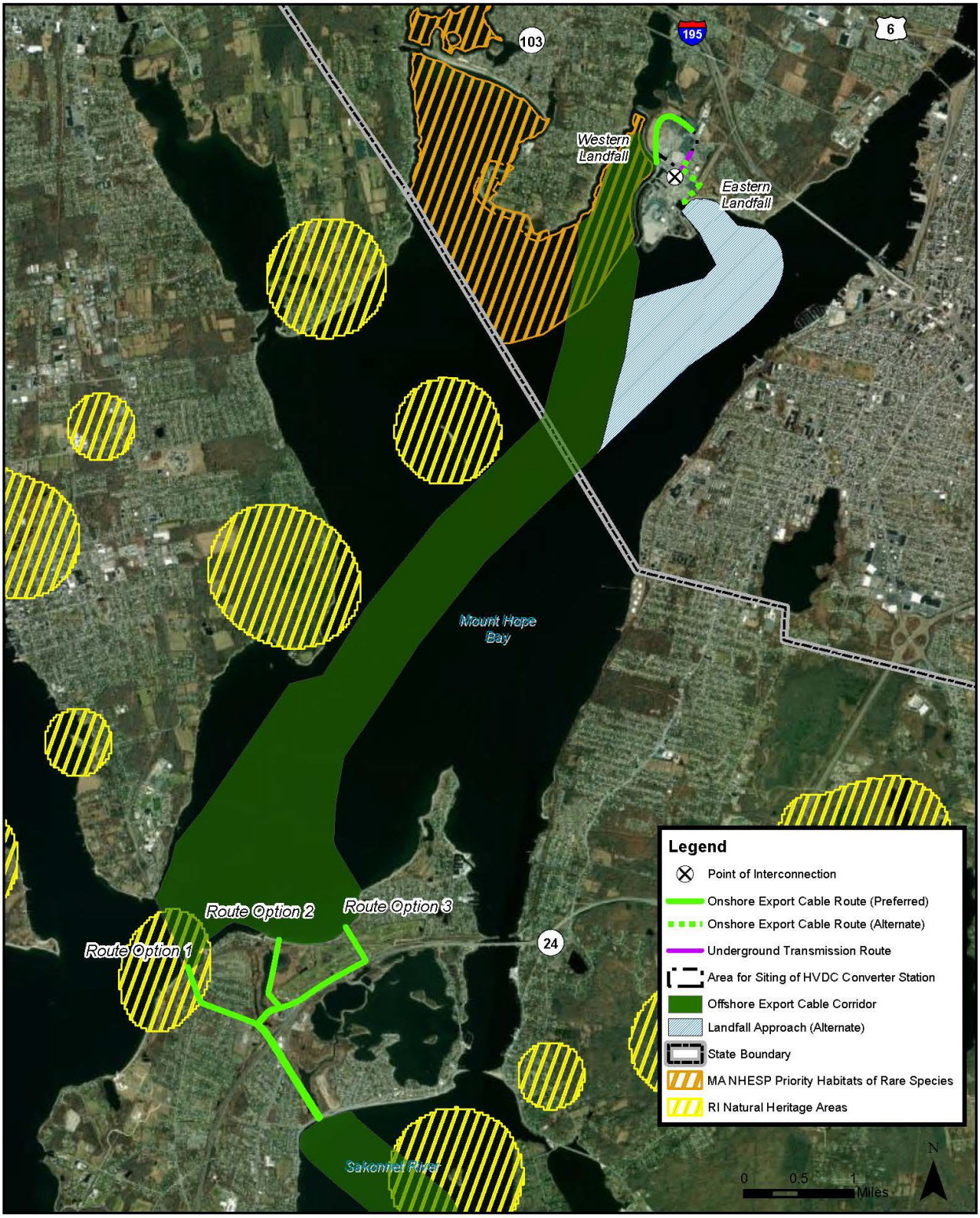
Additionally, Mayflower Wind received a response to a request for information from the NHESP regarding state-listed species which may be present along the Brayton Point Onshore Project Area. The response indicates the Brayton Point Onshore Project Area, or portion thereof, is located within Priority Habitat 387 (PH 387) and Estimated Habitat 353 (EH) as indicated in the Massachusetts Natural Heritage Atlas (14th Edition) for the least tern, a Massachusetts species of Special Concern (NHESP, 2021). The location and extent of NHESP-mapped Priority Habitats in the Brayton Point Onshore Project Area are shown in Figure 4-16.

Table 4-9. Rhode Island Species of Concern Identified near the Brayton Point Onshore Project Area

Scientific Name	Common Name	RI* Status	Town
Ammodramus maritimus	Seaside sparrow	SC	Tiverton
Anas strepera	Gadwall	SC	Little Compton
Ardea alba	Great egret	SC	Portsmouth
Bubulcus ibis	Cattle egret	SC	Portsmouth
Charadrius melodus	Piping plover	SE	Little Compton
Cicindela hirticollis	Beach-dune tiger beetle	ST	Middletown
Cirsium horridulum var. horridulum	Yellow thistle	ST	Middletown
Egretta caerulea	Little blue heron	SC	Portsmouth
Egretta thula	Snowy egret	SC	Portsmouth
Ellipsoptera marginate	Salt marsh tiger beetle	ST	Little Compton
Fraxinus nigra	Black ash	SC	Bristol
Geranium robertianum	Herb-Robert	SC	Middletown
Haematopus palliates	American oystercatcher	SC	Bristol
Honckenya peploides ssp. robusta	Seabeach-sandwort, sea-purslane, sea-chickweed	SC	Middletown
Ixobrychus exilis	Least bittern	ST	Middletown
Lithobates pipiens	Northern leopard frog	SC	Tiverton
Nycticorax nycticorax	Black-crowned night heron	SC	Portsmouth
Platanthera psycodes	Small purple fringed orchid	SC	Bristol
Plegadis falcinellus	Glossy ibis	SC	Portsmouth
Polygonum glaucum	Seabeach- or seaside-knotweed	ST	Little Compton
Ptilimnium capillaceum	Atlantic mock bishop's-weed	SC	Tiverton
Sterna antillarum	Least tern	ST	Tiverton
Tripsacum dactyloides	Gama-grass, sesame-grass	SC	Tiverton
Tyto alba	Barn owl	SE	Middletown
Viola rotundifolia	Round-leaved or early yellow violet	SE	Bristol

Notes:

*Rhode Island Status Codes (under RIDEM): SE= State Endangered; ST= Sate Threatened, SC= Special Concern
Source: RIDEM, 2021



Data source: MassGIS, 2017a and 2017b; RIGIS, 2019.

Figure 4-16. Location and Extent of NHESP Priority Habitats of Rare Species within the Brayton Point Onshore Project Area

4.4.2.3 Birds

To further refine the protected and listed species that may be present in the Falmouth and Brayton Point Onshore Project Areas, information was requested from the USFWS, the Massachusetts NHESP, and RIDEM.

USFWS

Mayflower Wind performed a preliminary federal-listed species query using the USFWS IPaC System. Specific to federal-listed avian species, the IPaC system identified the piping plover, red knot, and roseate tern, as well as a list of BCC, which may use habitats associated with the Project in both onshore and offshore areas. Mayflower Wind will perform follow-up consultations throughout the permitting process with the USFWS, Massachusetts NHESP, and RIDEM to implement measures to avoid, minimize or mitigate direct and indirect effects to avian species.

Massachusetts NHESP and RIDEM

In a letter to Massachusetts NHESP dated April 6, 2020, Mayflower Wind requested information regarding state-listed species which may potentially be present in habitats traversed by the Falmouth portions of the Project, including onshore and offshore areas. In response to that request, the Massachusetts NHESP responded in a letter dated May 1, 2020, indicating that the Falmouth Onshore Project Area, or a portion thereof, is located within Priority Habitat (PH) 945 and Estimated Habitat (EH) 756, as indicated in the 14th Edition of the Massachusetts Natural Heritage Atlas (Mass Gov, 2020) and shown in Figure 4-15. These areas of Priority and Estimated Habitats contain records for the following avian species: roseate tern, common tern, least tern, and piping plover.

On July 23, 2021, NHESP responded to a request for information regarding state-listed species which may be present along the Brayton Point Onshore Project Area. The response indicates the Brayton Point Onshore Project Area, or portion thereof, is located within PH 387 and 353 EH as indicated in the Massachusetts Natural Heritage Atlas (14th Edition) for the least tern, a Massachusetts species of Special Concern (NHESP, 2021).

Mayflower Wind also requested information from RIDEM regarding state listed species that may be present in areas in the vicinity of the Brayton Point Onshore Project Area. In response to that request, the RIDEM provided a list of species that have been identified in or near the Brayton Point Onshore Project Area (Table 4-10).

Table 4-10 provides a list of avian species of concern that may be affected by the landfall and onshore components of the Project. Specifically, the list includes federal-listed avian species and BCC identified through the Project's IPaC report, state-listed avian species identified through Massachusetts NHESP correspondence, RIDEM correspondence, and other species which may reasonably be expected to occur within the onshore and immediately adjacent shoreline habitats of the Onshore Project Areas. In addition to federal and state legal status, the table identifies global and state rarity rankings (provided by NatureServe), indicates whether the species is considered a Massachusetts SGCN, and identifies whether the species is a BCC as determined by the USFWS. Taxonomic order and nomenclature used in the table is based on the American Ornithological Society's 2019 Check-list of North American Birds (Chesser et al., 2019).

Table 4-10. Potentially Present Listed Avian Species in the Onshore Project Areas

Common Name	Scientific Name	Federal Legal Status[1]	MA Legal Status[2]	RI Legal Status	Global Rarity Rank[3]	MA Rarity Rank[4]	SGCN[5]	BCC USFWS Region 5[6]
Cuculidae (Anis, Cuckoos, Roadrunners)								
Black-billed cuckoo	*Coccyzus erythrophalmus*	-	-	-	G5	S4B, S4N	Y	Y
Anatidae (Ducks, Geese, and Waterfowl)								
Gadwall	*Anas strepera*	-	-	SC	G5	S2B,S4M	-	-
Ardeidae (Herons, Egrets, and Bitterns)								
Great egret	*Ardea alba*	-	-	SC	G5	S2B, S4N	-	-
Cattle egret	*Bubulcus ibis*	-	-	SC	G5	S1B,S3N	-	-
Little blue heron	*Egretta caerulea*	-	-	SC	G5	S1B,S3N	-	-
Snowy egret	*Egretta thula*	-	-	SC	G5	S2B,S4N	Y	Y
Least bittern	*Ixobrychus exilis*	-	SE	ST	G4	S1S2B	Y	Y
Black-crowned night heron	*Nycticorax mycticorax*	-	-	SC	G5	S2B	Y	-
Glossy ibis	*Plegadis falcinellus*	-	-	SC	G5	S2B	Y	-
Tytonidae (Barn owl)								
Barn owl	*Tyto alba*	-	SC	SE	G5	S2B,S2N	Y	-
Caprimulgidae (Nightjars)								
Eastern whip-poor-will	*Antrostomus vociferus*	-	SC	-	G5	S2S3B, S3N	Y	Y
Haemotopodidae (Oystercatchers)								
American oystercatcher	*Haemotopus pallatus*	-	-	SC	G5	S2	Y	Y
Charadriidae (Plovers)								
Piping plover	*Charadrius melodus*	T	T	SE	G3	S2B	Y	-
Scolopacidae (Sandpipers, Snipes)								
Whimbrel	*Numenius phaeopus*	-	-	-	G5	S3N	Y	Y
Ruddy turnstone	*Arenaria interpres*	-	-	-	G5	S4N	Y	IPaC
Dunlin	*Calidris alpina*	-	-	-	G5	S5N	-	Y
Purple sandpiper	*Calidris maritima*	-	-	-	G5	S4N	Y	Y
Semipalmated sandpiper	*Calidris pusilla*	-	-	-	G5	S5N	Y	Y
Short-billed dowitcher	*Limnodromus griseus*	-	-	-	G5	S4N	Y	Y
Lesser yellowlegs	*Tringa flavipes*	-	-	-	G5	S4N	-	Y
Willet	*Tringa semipalmata*	-	-	-	G5	S3B, S3N	Y	IPaC
Laridae (Gulls, Terns)								
Bonaparte's gull	*Chroicocephalus philadelphia*	-	-	-	G5	S4N	-	-

Common Name	Scientific Name	Federal Legal Status[1]	MA Legal Status[2]	RI Legal Status	Global Rarity Rank[3]	MA Rarity Rank[4]	SGCN[5]	BCC USFWS Region 5[6]
Ring-billed gull	*Larus delawarensis*	-	-	-	G5	S1B, S5N	-	-
Herring gull	*Larus argentatus*	-	-	-	G5	S3S4B, S5N	Y	-
Greater black-backed gull	*Larus marinus*	-	-	-	G5	S3S4B, S5N	Y	-
Roseate tern	*Sterna dougallii*	E	E	E	G4	S2B, S3N	Y	Y
Least tern	*Sternula antillarum*	-	SC	ST	G4	S2B	Y	Y
Common tern	*Sterna hirundo*	-	SC	-	G5	S3B, S4N	Y	-
Arctic tern	*Sterna paradisaea*	-	SC	-	G5	S1B, S1S2N	Y	-
Royal tern	*Thalasseus maximus*	-	-	-	G5	S1N	-	-
Pandionidae (Osprey)								
Osprey	*Pandion haliaetus*	-	-	-	G5	S5M	-	-
Accipitridae (Eagles, Hawks, Kites								
Golden eagle	*Aquila chrysaetos*	-	-	-	G5	S1N	-	Y
Northern harrier	*Circus cyaneus*	-	T	-	G5	S2B, S4N	Y	-
Sharp-shinned hawk	*Accipiter striatus*	-	-	-	G5	S2B, S5N	-	-
Cooper's hawk	*Accipiter cooperii*	-	-	-	G5	S4B, S5N	-	-
Northern goshawk	*Accipiter gentilis*	-	-	-	G5	S3	Y	-
Bald eagle	*Haliaeetus leucocephalus*	-	SC	-	G5	S2B, S3N	Y	Y
Red-shouldered hawk	*Buteo lineatus*	-	-	-	G5	S4B, S4N	-	-
Broad-winged hawk	*Buteo platypterus*	-	-	-	G5	S5B, S5N	Y	-
Red-tailed hawk	*Buteo jamaicensis*	-	-	-	G5	S5B, S5N	-	-
Rough-legged hawk	*Buteo lagopus*	-	-	-	G5	S3N	-	-
Strigidae (Typical Owls)								
Snowy owl	*Bubo scandiaca*	-	-	-	G5	S2S3N	-	IPaC
Falconidae (Falcons)								
American kestrel	*Falco sparverius*	-	-	-	G5	S3	Y	Y
Merlin	*Falco columbarius*	-	-	-	G5	S4N	-	-
Peregrine falcon	*Falco peregrinus*	-	SC	-	G5	S2B, S3N	Y	Y
Turdidae (Thrushes)								
Wood thrush	*Hylocichla mustelina*	-	-	-	G4	S5B	Y	Y
Fringilldae (Old World Finches, Finches)								
Evening grosbeak	*Coccothraustes vespertinus*	-	-	-	G5	S2B, S3S4N	-	IPaC

Common Name	Scientific Name	Federal Legal Status[1]	MA Legal Status[2]	RI Legal Status	Global Rarity Rank[3]	MA Rarity Rank[4]	SGCN[5]	BCC USFWS Region 5[6]
Emberizidae (New World Sparrows)								
Seaside sparrow	*Ammospiza maritima*	-	-	SC	G4	S2	Y	Y
Nelson's sparrow	*Ammodramus nelsoni*	-	-	-	G5	S2N	-	Y
Icteridae (New World Blackbirds, Orioles)								
Bobolink	*Dolichonyx oryzivorus*	-	-	-	G5	S3S4B	Y	IPaC
Rusty blackbird	*Euphagus carolinus*	-	-	-	G4	S1B, S3N	Y	Y
Parulidae (New World Warblers)								
Prothonotary warbler	*Protonotaria citrea*	-	-	-	G5	S1B, S2N	-	Y
Kentucky warbler	*Geothlypis formosa*	-	-	-	G5	S2N	-	Y
Prairie warbler	*Setophaga discolor*	-	-	-	G5	S3S4B	Y	Y
Canada warbler	*Cardellina canadensis*	-	-	-	G5	S5B	Y	Y

Notes:

1 Federal Legal Status Codes (under Federal Endangered Species List): E = endangered; T = threatened; C = candidate; "-" = no status.

2 Massachusetts Legal Status Codes (under Massachusetts Endangered Species Lists): E = endangered; T = threatened; SC = special concern; WL = watch list; "-" = no status. Rhode Island Status Codes (under RIDEM) SE= State endangered, ST= Sate threatened, SC= State concern.

3,4 Global and Massachusetts Rarity Rank: NatureServe Global Conservation Status Ranks from http://explorer.natureserve.org/ where the conservation status of a species is designated by a number from 1 to 5 (1 = critically imperiled, 2 = imperiled, 3 = vulnerable, 4 = apparently secure, 5 = secure), preceded by a letter reflecting the appropriate geographic scale of the assessment (G = Global, S = Subnational [state]). A numerical range rank (e.g., S2S3) is used to indicate rank of uncertainty about the status of the species; an inexact numeric rank denoted with "?". Breeding status qualifiers: B = breeding population; N = nonbreeding population; M = migrant species occurring regularly on migration at particular staging areas or concentration spots.

5 SGCN from 2015 Massachusetts State Wildlife Action Plan. Y = species identified as a SGCN in Massachusetts; "-" = species not identified.

6 USFWS Division of Migratory Birds, Birds of Conservation Concern for Region 5 (Northeast) (USFWS 2008). Y = species identified as a species of concern in Region 5; IPaC = species not identified on 2008 BCC list but identified as a BCC in Project-specific USFWS IPaC report dated May 15, 2020; "-" = species not identified.

4.4.2.4 Amphibians

The eastern spadefoot toad (*Scaphiopus holbrookii*), listed as threatened under the MESA (no listing at the federal level), is known to occur within PH 490/EH 435, within the Falmouth Onshore Project Area. This burrowing amphibian prefers a habitat that consists of dry, sandy soils. They can be found in pitch pine barrens, coastal woodlands, or shrubby areas patched with temporary ponds. During the winter they hibernate by burrowing up to 8 ft (2.4 m) underground, but come out to mate during the warm weather months. This species is dependent on ephemeral wetlands and vernal pools for breeding and completion of larval development (NHESP, 2015b).

Based on correspondence with RIDEM, the only known amphibian of concern in the Brayton Point Onshore Project Area at Aquidneck Island is the northern leopard frog (*Lithobates pipiens*). They can be found in a variety of aquatic habitats that' include slow moving or still water along streams, rivers, wetlands vernal pools and even human created habitats. The adult frogs consume small invertebrates, while the larval stages consume plant matter and algae (USFWS, 2015).

4.4.2.1 Reptiles

Reptiles within the Falmouth Onshore Project Area

The eastern box turtle (*Terrapene carolina*) is listed as a species of special concern under the MESA (no listing at the federal level) and is a terrestrial turtle that occurs within a wide variety of habitats, including both dry and moist woodlands, brushy fields, thickets, marshes, bogs, and stream banks. On Cape Cod, the optimal habitat for this species includes pine barrens and oak thickets, interspersed with huckleberry ground cover, low bush blueberries and thickets of bracken fern (NHESP, 2015e). Eastern box turtles have been identified within PH 490/EH 435 within the Falmouth Onshore Project Area, which consists of the Frances A. Crane Wildlife Management Area.

The Eastern hog-nosed snake (*Heterodon platirhinos*) is listed as a species of special concern under the MESA (no listing at the federal level) and is known to occur within PH 490/EH 435 within the Falmouth Onshore Project Area. This snake can be found in both forested and non-forested areas, favoring edge habitat. The species typically occurs in forests dominated by pitch pine and scrub oak, blueberry, white pine, huckleberry, and other herbaceous communities. Habitat also includes glacial outwash plains and areas with abundant ground debris including rock piles. They can also be found in areas associated with wetlands as their primary prey (toads) occur in these areas.

Reptiles within the Brayton Point Onshore Project Area

Based on RIDEM correspondence, there are no reptiles of concern within or near the Brayton Point Onshore Project Area.

4.4.2.1 Invertebrates

Invertebrates are a broad classification that contain many of Massachusetts and Rhode Island state-listed species.

Invertebrates within the Falmouth Onshore Project Area

Several butterflies and moths have been identified for PH 490/EH 435. Surveys and studies near the Falmouth Onshore Project Area have shown that these species prefer the pitch pine-scrub oak natural community, as the scrub oak or heath are the primary host or forage plants for numerous moth species. However, other moth species identified by the NHESP as being present within PH 490/EH 435 (water-willow borer and heath metarranthis) use the wetland obligate plant species waterwillow (*Decodon verticillatus*) and cranberry, (*Vaccinium macrocarpon*), respectively, as their host or forage plants making these species more wetland dependent. The pine barrens bluet (*Enallagma recurvatum*) has also been identified in association with PH 490/EH 435 within the Falmouth Onshore Project Area.

Surveys conducted within Camp Edwards on JBCC, located north of the Falmouth Onshore Project Area, have historically documented numerous state-listed species of rare moths. Areas of particular importance to state-listed rare moths includes areas of scrub oak shrubland and grasslands (MARNG, 2009).

An additional two-year study was recently concluded which surveyed JBCC for butterflies, moths, and other insects. Although this study focused on state-listed insects, it identified a total of 634 species of moths, 40 butterflies, 63 beetles including two tiger beetles, and 14 odonates (Mello, 2018).

Invertebrates within the Brayton Point Onshore Project Area

Through correspondence with RIDEM, it was determined that the beach dune tiger beetle (*Cicindela hirticollis*) and salt marsh tiger beetle (*Ellipsoptera marginate*) are Rhode Island state threatened species within or near the Brayton Point Onshore Project Area. Adult tiger beetles may emerge in the fall, feed until cold weather, and then burrow underground for the winter. They then emerge again in the spring to feed, mate, and lay eggs. They slowly die off as the season progresses. Tiger beetles eat small insects and other arthropods, using their burrows to ambush their prey. The burrows are usually located toward the back end of the beach, far enough from the water line but where the sand is still moist. These beetles are threatened due to habitat disturbance form humans, tidal erosion, and sea level rise (Leonard and Bell, 1999).

4.4.2.2 Plants

Plants within the Falmouth Onshore Project Area

The saltpond pennywort (*Hydrocotyle verticillata*) and the sea-beach knotweed (*Polygonum glaucum*) occur in PH 945, which is associated with coastal habitats in Falmouth and Nantucket Sound. Saltpond pennywort, listed as threatened under the MESA, grows along sandy shorelines and salt pond marshes of brackish ponds near the ocean, and is only known from 20 sites in Massachusetts (NHESP, 2015c). The sea-beach knotweed is a species of special concern under the MESA and can be found on coastal beaches and the shores of protected bays and salt ponds (NHESP, 2015d). Project activities onshore are not likely to affect the saltpond pennywort or the sea-beach knotweed due to the minimal anticipated shoreline disturbance from the HDD installation of the export cable landfall.

Two state-listed rare species of plants occur within PH 490 and have been identified at Camp Edwards: broad tinker's weed (*Triosteum perfoliatum*) and adder's tongue fern (*Ophioglossum pusillum*) (MARNG, 2009). The broad tinker's-weed is listed as endangered under the MESA (no listing at the federal level) and can be found in dry, open woods, shunning heavy shade. There are only three known stations in Massachusetts where this plant is growing, all in the Upper Cape region (NHESP, 2015a). Adder's tongue fern is listed as Threatened under the MESA (no listing at the federal level). This plant can be found in boggy meadows, on the boarders of marshes, within wet fields, and moist woodland clearings where there is ample sun availability (NHESP, 2019).

Species-specific surveys during the appropriate flowering period will be necessary to survey workspaces and access roads to identify if either the broad tinker's-weed or adder's tongue fern are potentially present.

Plants within the Brayton Point Onshore Project Area

According to RIDEM correspondence (Jordan, 2021), there are nine species of plants that are of concern in the area of Aquidneck Island. Round leaf yellow violet (*Viola rotundifolia)*, a state endangered species in Rhode Island, is a low growing perennial native to the northeastern U.S. found in wooded areas. Sea-beach knotweed (*Polygonum glaucum),* classified as threatened in the state, occurs in coastal habitats and has also been identified in the Brayton Point Onshore Project Area in Rhode Island. Sea-beach sand wort (*Honckenya peploides ssp. Robusta)*, another coastal plant in the area, is common along ocean shoreline in sandy, rocky or gravel substrate (Native Plant Trust, 2021). The sand wort is of special concern according to RIDEM. Project activities onshore are not likely to affect these plants due to the minimal anticipated shoreline disturbance.

Atlantic mock bishop weed (*Ptilimnium capillaceum)* (special concern species) and yellow thistle (*Cirsium horridulum)* (state-threatened) grow in brackish or saltwater marshes, and tidal flats that are present to the east of the proposed onshore export cable route options on Aquidneck Island (Native Plant Trust, 2021). The

black ash (*Fraxinus nigra*), a state species of concern, is a slow-growing tree found of northern wooded swamps. Project activities will also have minimum disturbance to these habitats and therefore minimal disturbance to these species.

Herb Robert (*Geranium robertianum)*, small purple fringed orchid (*Platanthera psycodes)*, and gama-grass (*Tripsacum dactyloides)* are all species of special concern in Rhode Island but have all been noted to inhabit anthropogenically disturbed areas (Native Plant Trust, 2021).

Based on the mapped and observed habitats on site, the likelihood that portions of the Onshore Project Area may serve as a resource for a protected species is very low or low for a majority of the Falmouth Onshore Project Area (Table 4-11) as well as the Brayton Onshore Project Area (Table 4-12).

Table 4-11. Potential for Falmouth Onshore Project Area to Serve as a Resource for Protected Species

Site	Component	Classification	Potential to Serve as a Resource for a Protected Species
Landfall Locations	Worcester Avenue	Site is largely Urban/Developed	Very low. Limited habitat resource available.
	Shore Street	Site is largely Urban/Developed	Very low. Limited habitat resource available.
	Central Park	Site is largely Urban/Developed	Very low. Limited habitat resource available.
Onshore Export Cables		Largely Urban/Developed with minor Suburban/Fragmented areas	Very low- low. Limited habitat resource available.
Onshore Substation	Lawrence Lynch	Site is largely Urban/Developed	Very low. Limited habitat resource available.
	Cape Cod Aggregates	Site is largely Urban/Developed	Low. Site is used by those species adapted to urban environments
Onshore Export Cable Route (alternate) to Cape Cod Aggregates (alternate)		Some Undisturbed with large amounts of Urban habitat	Low. Closeness to areas of disturbance and anthropogenic perturbations will limit the favorability of this site.
Underground Transmission Route from Alternate Substation Site		Some Undisturbed with large amounts of Urban habitat	Low. Closeness to areas of disturbance and anthropogenic perturbations will limit the favorability of this site.
POI	Switching Station (Falmouth Tap)	Site is largely Urban/Developed	Low. Site is used by those species adapted to urban environments

Table 4-12. Potential for Brayton Onshore Project Area to Serve as a Resource for Protected Species

Site	Component	Classification	Potential to Serve as a Resource for a Protected Species
Landfall Locations	Western landfall	Site is Largely Urban/Developed	Very low. Limited habitat resource available.
	Eastern landfall	Site is Largely Urban/Developed	Very low. Limited habitat resource available.
Onshore Export Cables	Aquidneck Island	Largely Urban/Developed with minor wetland areas	Low. Limited habitat resource available.
POI	Brayton Point	Site is Largely Urban/Developed	Very low. Limited habitat resource available.
Onshore Export Cable Routes and Underground Transmission Route	Brayton Point	Site is Largely Urban/Developed	Very low. Limited habitat resource available.
HDVC Converter Station	Brayton Point	Site is Largely Urban/Developed	Very low. Limited habitat resource available.

5.0 Effects Characterization

5.1 Effects Characterization Approach

The following provides a description of the approach used to characterize effects of the Project on terrestrial vegetation and wildlife resources (receptors) within or near the Onshore Project Areas. This approach used in this Report includes three primary steps:

1. Identification and characterization of IPFs;
2. Identification of potentially affected resources; and
3. Effect Characterization.

Since the majority of the Onshore Project Areas consist of pre-existing disturbed areas in the form of roadway layouts, paved parking lots, former power plant, sand and gravel pits, or existing utility ROWs, disturbances to pristine ecological communities or even substantial impacts to ecological resources are unlikely. Mayflower Wind will identify potential priority communities within the Onshore Project Areas and attempt to minimize potential effects to these sites through design and construction phases of the Project. Effects to natural communities are anticipated to be temporary in nature and will be avoided whenever practicable.

5.1.1 Impact Producing Factors

The Bureau of Ocean Energy Management, in its *Information Guidelines for a Renewable Energy Construction and Operations Plan* (COP) (BOEM, 2020), identified seven primary potential IPFs which may affect biological resources. Table 5-1 below provides definitions of the criteria used to qualitatively assess the anticipated effect intensity with the effect being change to the resource brought about by the presence of a Project component or by the execution of a Project activity. The spatial extent and duration of activities associated with each IPF are described in detail in Section 3.4 of the COP.

Based on an assessment of the Project activities described in Section 2.0 (and detailed in Section 3 of the COP), each anticipated IPF is assigned an intensity ranking based on a qualitative assessment of the criteria provided in Table 5-2. Using these criteria, an effect intensity is assigned (no/none, very low, low, medium, or high).

Based on an assessment of the environment described in Section 4.0, the terrestrial vegetation and wildlife resources are assigned a sensitivity ranking based on a qualitative assessment of the criteria presented in Table 5-3, whereby sensitivity is ranked as follows: very low, low, medium and high. The degree of sensitivity of a resource is, in part, based on a resource's resilience, its ability to naturally adapt to changes, or to recover from effect.

Table 5-1. Effect Criteria Qualitative Definitions

Effect Criteria	Definitions
Nature	• **Positive** – An effect that is considered to represent an improvement to the baseline or to introduce a new desirable factor. • **Negative** – An effect that is considered to represent an adverse change from the baseline or to introduce a new undesirable factor.
Type	• **Direct** – An effect created as a direct result of the Project or Project activities. • **Indirect** – An effect which may be caused by the Project but will occur in the future or outside the direct area of Project influence.
Reversibility	• **Temporary** – Effects that are transient, intermittent, or occasional in nature and/or largely reversible. • **Permanent** – Effects that occur during the development of the Project and cause a permanent change in the affected impact indicator or resource that endures substantially beyond the Project lifetime (irreversible).
Duration	• **Short-Term** – Effects that are predicted to last only for a limited period (less than four years) but will cease on completion of an activity, or as a result of mitigation measures and natural recovery. • **Medium-Term** – Effects that will occur over a period of four to 10 years. This will include impacts that may be intermittent or repeated rather than continuous if they occur over an extended time period. • **Long-Term** – Impacts that will occur over an extended period (more than 10 years). This will include impacts that may be intermittent or repeated rather than continuous if they occur over an extended time period.
Geographical Extent (Area)	• **Local** – Effects that alter or influence locally important resources or are restricted to a single (local) administrative area or local community (not widespread). • **Regional** – Effects that alter or influence regionally important environmental resources or are experienced at a regional scale as determined by administrative boundaries (fairly widespread). • **National** – Effects that alter or influence nationally important resources, affect an area that is nationally important/protected or macro-economic consequences (widespread).
Cumulative	• **Cumulative** – Direct or indirect effects that could have a greater expression due to the proximity and timing of other activities in the Onshore Project Areas. • **Synergistic** - Direct or indirect effects that could have a greater expression due to the additive or interactive nature of the effect in a particular place and within a particular time.

Note:
Effect criteria and definitions adapted from International Institute for Sustainable Development ([IISD], 2016)

Based on that qualitative assessment and the application of professional judgment, each anticipated effect is assigned one of the intensity levels defined in Table 5-2.

Table 5-2. IPF Intensity Levels and Defining Characteristics

IPF Intensity Level	Example Characteristics
High	• Negative effect is irreversible or permanent. • Long-term duration of negative effects (more than 10 years) that are widespread. • Effects that influence or alter nationally important resources. • Effects that change ambient conditions to cause (or reasonably may cause) death or injury with population level effects to non-protected species. • Changes to ambient conditions that may cause death or injury to a protected species and could influence overall species survival. • Cumulative or synergistic effects will occur or may be reasonably expected to occur and have population-level effects on non-protected species.
Medium	• Medium-term duration of effects (five to 10 years) that are geographically widespread (national or regional). • Direct or indirect effects that are reversable, with recovery over a longer period. • Air pollution, water contamination, coastal pollution by toxic or slightly biodegradable products and/or hazardous substances having a chronic effect on human health after long-term exposure. • Ambient in-air sound level slightly higher than legal threshold. • Introduced sound level resulting in death or injury of individuals of a protected species, however no impact to the survival of the species.
Low	• Shorter-term effect (one to five years); effects that are local and reversible. • Level of air, water, and coastal pollution detectable, but below thresholds known to have a negative effect on resident and migratory populations of vegetation or wildlife. • Acceptable in-air sound, light, or electric and magnetic field (EMF) level below the thresholds for effects on resident and migratory wildlife population. • Low level, long-term effects to the landscape. • Effects causing only minor behavioral shifts to protected species.
Very Low	• Short-term impact (less than one year), local and reversible. • Little to no change in the ecosystems and/or landscape. • Waste effluents released into water, air and soil/ground at near-background concentrations. • Post-construction/operations levels (e.g., sound, light, EMF, vegetation cover) like background levels or pre-construction conditions. • No impact on protected species.
None	• Intensity is so immaterial that resulting impact is scoped out of the impact assessment process.

Table 5-3. Biological Resource Sensitivity Ranking

Ranking	Resource Characteristics
High	• Numerous sensitive or protected fauna and/or flora where a high level of biodiversity can be observed; or is a protected ecosystem of regional, state, or federal importance. • An already vulnerable resource with very little capacity and means to adapt to or tolerate the changed conditions.
Medium	• A few species of sensitive or protected fauna and/or flora or a sensitive ecosystem or a locally protected ecosystem or habitat. • A protected species or habitat with limited capacity and means to adapt to change and tolerate changed conditions. Adaptation may take time and/or may only be partial.
Low	• Very few individuals of sensitive or protected fauna and/or flora or is an ecosystem which is not protected at local, state, or federal levels. • A resource with some capacity and means to adapt to change and maintain/improve current conditions. Adaptation may take time and/or may only be partial.
Very Low	• No sensitive or protected fauna and/or flora or is an ecosystem that is not sensitive or that is already impacted. • A resource with the capacity and means to adapt to change and tolerate the changed conditions.

5.1.2 Potentially Affected Resources

Potentially affected resources include natural communities, as described in Section 4.0. Resource sensitivity varies within the Onshore Project Areas. The resource sensitivity and associated basis for each ranking is summarized in Table 5-4 for the Falmouth Onshore Project Area and Table 5-5 for the Brayton Point Onshore Project Area.

Table 5-4. Resource Sensitivity for Project Components – Falmouth Onshore Project Area

Project Component	Resource Sensitivity	Basis
Landing Locations		
Worcester Avenue	Very Low	HDD landing will avoid nearshore coastal communities; landing is located in developed grassy median strip.
Shore Street	Very Low	HDD landing will avoid nearshore coastal communities; landing is located in developed parking lot.
Central Park	Very Low	HDD landing will avoid nearshore coastal communities; landing is located in developed grassy area.
Onshore Export Cable Routes	Very Low	Cable installation will occur within roadways or road shoulder; adjacent disturbed or common vegetative communities are not highly sensitive.
Substation Sites		
Lawrence Lynch site	Very low	Previously disturbed site; sand and gravel pit.
Cape Cod Aggregates site	Very Low	Previously disturbed site; sand and gravel pit.
Underground Transmission Route	Very Low	Cable installation will occur within roadways or road shoulder; adjacent disturbed or common vegetative communities that are not highly sensitive.
POI	Low	Location is an existing switching station (Falmouth Tap); existing developed site within the maintained transmission ROW..

Table 5-5. Resource Sensitivity for Project Components – Brayton Point Onshore Project Area

Project Component	Resource Sensitivity	Basis
Landing Locations		
Western landfall	Very Low	Previously disturbed industrial site (former power plant).
Eastern landfall	Very Low	Previously disturbed industrial site (former power plant).
Onshore Export Cable Routes	Very Low	Previously disturbed industrial site and urban developed areas.
HVDC converter station	Very low	Previously disturbed industrial site.
Underground Transmission Route	Low-Very Low	Cable installation will occur within roadways or road shoulder; adjacent disturbed or common vegetative communities are not highly sensitive.
POI	Low	Located on a disturbed site within the maintained existing transmission ROW.

Within the Onshore Project Areas, resources that are susceptible to construction, O&M, and decommissioning activities of the Project will be plant species that are within or in immediate proximity to the Onshore Project Areas, as well as animals that have the potential to enter or maintain habitat within or around the Onshore Project Areas. Habitat will be temporarily disrupted during the stages of the Project from construction, to continued operation from utility line maintenance, and during decommissioning. The Project may conduct species-specific surveys for potential rare or protected species of flora and fauna in consultation with the NHESP. The surveys will be conducted during the appropriate time of the year to document presence/absence of protected species and to develop a plan to avoid, minimize or mitigate Project-related effects on the local vegetation and wildlife.

5.2 Identification and Characterization of Effects

The following sections describe the potential for effects associated with planned Project activities (construction, O&M and decommissioning) for the HDD landing locations for the offshore export cables, onshore export cables, onshore substation, HVDC converter station, underground transmission routes, and the POIs. The IPF intensity is characterized under pre- and post-mitigation conditions for construction and decommissioning is provided in Table 5-6 and Table 5-7 for the Falmouth Onshore Project Area and Brayton Point Onshore Project Area, respectively. The IPF intensity for pre- and post-mitigation conditions for O&M is provided in Table 5-8 and Table 5-9 for the Falmouth Onshore Project Area and the Brayton Point Onshore Project Area, respectively. Decommissioning IPFs are expected to be similar to those associated with construction where equipment removal and/or facility demolition is planned. However, not all facilities or structures may be removed.

Given the similarity of the construction for both, the Falmouth Onshore Project Area and the Brayton Point Onshore Project Area are discussed together. However, when necessary and appropriate, individual components are called out.

5.2.1 Ground Disturbance

5.2.1.1 Construction

Ground disturbance activities will be required during the construction phase across the majority of the Onshore Project Areas. Ground disturbance for each of the onshore Project components are described below.

Landing Locations

Ground disturbance for the HDD landings of the offshore export cables will be temporary. All landfall locations for Falmouth and Brayton Point Onshore Project Areas will occur within previously disturbed or paved surfaces; thus, resulting in minimal, if any, effects to vegetation, wildlife, and protected species. The Falmouth Worcester Avenue landing (preferred) will involve disturbance within a grassy median strip. The Shore Street and Central Park alternate landfall locations will occur within previously disturbed or paved surfaces. The

Brayton Point western (preferred) and eastern (alternate) landfall locations consist of roads and former industrial uses. Post-construction conditions are expected to be comparable to pre-construction conditions. IPF intensity is **Low** to **Very Low**.

Onshore Export Cables

The underground onshore export cables for both the Falmouth and Brayton Point Onshore Project Areas will be located within previously disturbed areas or existing paved public roadway and installed via HDD methods thereby avoiding measurable surface impacts.

Ground disturbance activities within the underground portion of the Project will involve the cutting of roadway, the excavation of ground under the roadway, the installation of the underground cables, backfill, and resurfacing of the roadway. Use of previously disturbed or paved surfaces avoids effects to vegetation, wildlife, and protected species. The IPF intensity is **Low** to **Very Low**.

Onshore Substation/HVDC Converter Station

The onshore substation and/or HVDC converter station will require ground disturbance from construction of the facility within the chosen location. This will require grading to create a level working surface followed by the construction of a substation and HVDC converter station, including the addition of impervious surfaces to the area.

The preferred location of the onshore substation facility is within a previously disturbed sand and gravel pit site (the Lawrence Lynch Gifford Street Pit) that has been previously cleared of vegetation, such that construction of the substation facility will require minimal (if any) vegetation clearing. This site also retains little value for wildlife resources as a result of the historical use of the site for sand and gravel mining. The Cape Cod Aggregates site under consideration as an alternate location for the substation facility has been similarly disturbed in the past for sand and gravel mining such that use of this site for the substation will have minimal effects on vegetation and wildlife resources.

The HVDC converter station is to be located on Brayton Point which is the site of a recently (2017) decommissioned power plant. The site is characterized as 99.9 percent Impervious and Developed Open Space that has been previously disturbed and cleared of vegetation. Use of the site would have very limited, if any, environmental impact.

Effects on vegetation and wildlife resources for the switching station facility will also be minimized through the siting of this facility within the previously disturbed, recently abandoned footprint for the Transmission Operator switching station. This measure will keep Project-related effects on areas of previously cleared utility line ROW and will minimize the need for vegetation clearing to the maximum extent practicable

For the site options, vegetation and tree removal will be very limited. The effects will be negative, direct, temporary, short-term, and local. Therefore, the intensity of this IPF is **Low** to **Very Low** for Lawrence Lynch site, Cape Cod Aggregate site and Brayton Point sites.

Underground Transmission Route

The underground transmission route(s) will be located within previously disturbed areas or existing paved public roadway or shoulder. Ground disturbance activities within the underground portion of the Project will involve the cutting of roadway, the excavation of ground under the roadway, the installation of underground cables, backfill and resurfacing of the roadway. Therefore, the intensity of this IPF is **Low** to **Very Low.**

POIs

Existing facilities will be used for both the Falmouth POI and the Brayton Point POI. Any upgrades involving ground disturbance will occur on the disturbed sites within the maintained existing ROWs. Therefore, the intensity of this IPF is **Low.**

5.2.1.2 Operation and Maintenance

No additional ground disturbance will occur during O&M throughout the lifespan of the Project. Ongoing vegetation maintenance within the ROW will maintain vegetative cover and repair areas where erosion was evident. Where practicable, vegetation within approximately 50 feet (15.2 m) of the onshore substation and converter station fence will be maintained to knee level or lower using a lawn mower, string trimmer, pruner, hedge trimmer, or similar based on final landscaping plans. The Project will not conduct vegetation maintenance outside of the property or lease boundary. Planting and maintenance plans will account for the safety, security, and visual screening needs of the Project. Similar vegetation maintenance practices will be followed along any underground cable easements outside of paved roadway. Vegetation, where present, will be maintained to knee level or lower along a corridor up to 35 feet (10.7 m) in width to protect the cables from potential damage due to large root systems. Should repair or replacement of equipment be necessary, ground disturbing activities will be expected to be similar to those characterized for construction.

5.2.1.3 Decommissioning

During the decommissioning stage, the physical disturbances will be limited to areas where work is directly being performed. The effect will be local and temporary, similar to effects during construction. Decommissioning/demolition of transmission system components is not anticipated. However, decisions regarding actual demolition of facilities will be made in consultation with the community.

5.2.2 Introduction of Sound

5.2.2.1 Construction

Construction noise will result from the operation of construction equipment and heavy machinery across the Project alignment and at the onshore substation and switching station sites. During the construction stage, this noise will be limited to areas where work is directly being performed, characterizing the effect as local and temporary. The sound will have a direct effect on the natural environment. It is anticipated to have no effect on plants, but may cause some animals to move away from the construction activities and avoid the area of construction. The effects will be negative, direct, temporary, short-term, and local. Therefore, for the Falmouth and Brayton Point Onshore Project Areas, the intensity of this IPF for the landing locations and underground transmission route is **Very Low** to **Low**. The IPF intensity for the POIs is **Very Low**. For the substation (Falmouth) and HVDC converter station (Brayton Point), the IPF intensity is **Low**. For more information on in-air acoustic effects, please see COP Appendix U1, In-Air Acoustic Assessment.

5.2.2.2 Operation and Maintenance

Noise during O&M of the Project within the Falmouth and Brayton Point Onshore Project Areas will typically be confined to the areas surrounding the substation and HVDC converter station, and it is anticipated to have no effect on vegetation resources and negligible effects on wildlife resources. There will be no noticeable noise associated with the operation of the underground cables. This effect is negative, direct, temporary, long-term, and local. The intensity of this IPF is **Low**.

5.2.2.3 Decommissioning

During the decommissioning stage, sound introduction will be limited to areas where work is directly being performed, characterizing the effect as local and temporary and will be similar to effects during construction. Decommissioning/demolition of transmission system components is not anticipated. However, decisions regarding actual demolition of facilities will be made in consultation with the community.

5.2.3 Introduction of Light

5.2.3.1 Construction

Alteration of ambient light during the construction stage of the Project will consist of lighting needed during construction activities. Construction lighting is typically used if there is not sufficient daylight during work

hours (such as during the winter months when standard construction hours may occur prior to sunrise or after sunset) or if a construction activity is planned that requires 24-hour operations (such as the HDD), or must be executed in a continuous manner until complete (such as the pouring of a concrete foundation) and will extend past daylight hours. Construction lighting will be accomplished in a manner consistent with the Energy Facilities Siting Board (EFSB) required Construction Management Plan (for both MA EFSB and RI EFSB). Lighting will be minimized to the extent practicable to reduce potential displacement or attraction of wildlife species to Project sites during construction activities within the Onshore Project Areas. The sensitivity of the terrestrial vegetation and wildlife to increased ambient light during construction is medium due to the sensitivity of the surrounding area. This effect will be direct, short-term, temporary, and local. Therefore, the intensity of light introduction is **Low** to **Very Low**.

5.2.3.2 Operation and Maintenance

There will be an addition to ambient light surrounding the substation/HVDC converter station from the addition of security lighting. This will have little to no effect on the surrounding flora and fauna population but may cause some animals to be attracted to or avoid the additional light sources. This effect will be direct and localized to the areas surrounding the substation/HVDC converter station and the POIs. The effects of the additional light are negative, direct, temporary, long-term, and local. The intensity of this IPF during O&M is **Very Low**.

5.2.3.3 Decommissioning

During the decommissioning stage, this light introduction will be limited to areas where work is directly being performed; the effects will be temporary and similar to those during construction. Decommissioning or demolition of transmission system components is not anticipated. However, decisions regarding actual demolition of facilities will be made in consultation with the community.

5.2.4 EMF Changes

5.2.4.1 Construction

The construction of onshore Project components will not cause changes in ambient EMF.

5.2.4.2 Operation and Maintenance

The generation of EMF for onshore export cables have been addressed in a detailed study provided in COP Appendix P1 (Electric and Magnetic Field [EMF] Assessment for the Proposed Mayflower Wind Onshore Transmission System). COP Appendix P1 models the EMF from the alternating current at the Falmouth Onshore Project Area. EMF from direct current, to be used at the Brayton Point Onshore Project Area, are anticipated to be lower. The effects of a change in ambient EMFs have been the subject of recent widespread debate in the biological community. Many studies have shown that the EMF emitted by transmission lines, extremely low frequency electromagnetic fields (ELF EMFs), have little appreciable effect on terrestrial wildlife and plants (Berger, 2010). These studies have shown no relationship between EMFs and the health, behavior, or productivity of wildlife or on the growth or viability of plants (Berger, 2010). Based on the current understanding of the subject, the effects are direct, long-term, and local. The intensity of this IPF during O&M is **Low** to **Very Low**.

5.2.4.3 Decommissioning

During the decommissioning stage, EMF will be reduced and ultimately eliminated. The effect will be local and temporary, and intensity will be **Very Low**. Removal of EMF generating export and transmission systems will eliminate these sources.

5.2.5 Resource Displacement

5.2.5.1 Construction

A certain amount of habitat use will be interrupted by the construction of the Project including flora or fauna that are located within or actively using the construction areas as part of their home range habitat. The Project will be mostly concentrated within areas that are previously disturbed or undergoing active management. In these areas with ongoing disturbance or limited existing habitats, there will be little additional displacement of such biological resources.

Few biological resources will be displaced for the onshore substation/HVDC converter station site as the sites under consideration have been previously disturbed and cleared of vegetation. Similarly, the POIs are located within the existing cleared existing ROWs that have been previously disturbed and developed for operation of the Falmouth Tap switching station (Falmouth POI) and existing National Grid substation (Brayton Point POI) such that the sites provide no or minimal habitat for wildlife resources. This is a direct, permanent, local effect. For mobile wildlife, the effect will be short-term, but repopulation of vegetation will take longer. The overall intensity of this IPF is **Very Low** to **Low** for most onshore components.

5.2.5.2 Operation and Maintenance

There will be no additional resource displacement occurring during the O&M phase.

5.2.5.3 Decommissioning

During the decommissioning stage, temporary physical and acoustical disturbances will be limited to areas where work is directly being performed. The effect will be local and temporary, similar to effects during construction. Decommissioning/demolition of transmission system components is not anticipated. However, decisions regarding actual demolition of facilities will be made in consultation with the community.

5.2.6 Direct Injury or Death

5.2.6.1 Construction

Construction activities may directly affect flora through either vegetation removal (mortality) or indirect effects such as shading that might occur with construction dust. Fauna may be affected through short-term perturbations that result in relocation or behavioral changes. Direct injury or mortality from a loss of resources, increased competition, and/or interactions with machinery and infrastructure are unlikely. Although this is the most severe potential effect, the duration of the construction activity will be very short term and the severity will be minimized as most animals will be accustomed to leaving the area as they are already likely to do during periodic vegetation management activities that occur on the ROW. Additionally, due to the short-term and extremely localized nature of this potential effect, population level effects to vegetation or wildlife resources are not anticipated to result from the construction activities. These potential effects can be further avoided, minimized, or mitigated to the maximum extent practicable through implementation of specific mitigation measures detailed in Section 5.4. The IPF intensity is characterized as **Low** or **Very Low**.

5.2.6.2 Operation and Maintenance

The potential for direct injury or death of biological resources is reduced during the O&M stage of the Project; however, this potential effect will still be a possibility due to continuing O&M at and surrounding the facilities. The overall intensity and severity of this potential effect to vegetation during O&M is very low as most of the Project would occur under paved surfaces. Minor maintenance of vegetation around the onshore substation, converter station, if any, would be routine landscaping. Vegetated utility lines under the auspices of Eversource will be subject to ongoing vegetation management activities as required by the appropriate state agencies. The intensity of this IPF is **None**.

Sensitivity of wildlife in the Onshore Project Areas to direct injury during O&M is **Low**.

5.2.6.3 Decommissioning

During the decommissioning stage, physical and acoustical disturbances will be limited to areas where work is directly being performed, characterizing the effect as local and temporary and will be similar to those for construction. Decommissioning/demolition of transmission system components is not anticipated. However, decisions regarding actual demolition of facilities will be made in consultation with the community.

5.2.7 Planned Discharges

5.2.7.1 Construction

Planned dewatering and the addition of stormwater runoff to the area will only effect areas in the direct vicinity of the construction activities. This activity will be temporary, short-term, and local in nature, and is anticipated to have minimal effects to vegetation and wildlife resources through implementation of standard construction best management practices (BMPs) to avoid dewatering discharge scour and siltation to nearby receiving waters, including wetlands. Terrestrial vegetation and wildlife in the Onshore Project Areas have a medium sensitivity to this IPF.

Although the effects are negative, direct, temporary and short-term, they will be regulated by construction permits and, therefore, the intensity of planned discharges during construction is **Very Low** to **Low**.

5.2.7.2 Operation and Maintenance

No planned discharges will occur during O&M throughout the lifespan of the Project. No change in hydrology and stormwater runoff is anticipated along the onshore export cable and underground transmission routes. Any potential changes in stormwater runoff quality or quantity will be addressed via compliance with the appropriate state stormwater regulations and standards. The future actions will incorporate control measures as necessary to meet these standards for either Massachusetts or Rhode Island.

5.2.7.3 Decommissioning

During the decommissioning stage, it is not anticipated that there will be planned discharges. Waste products will be stored in the appropriate receptacles and disposed of in a suitable offsite upland location. Decommissioning/demolition of transmission system components is not anticipated. However, decisions regarding actual demolition of facilities will be made in consultation with the community. Should demolition occur, BMPs will be adhered to and waste products handled and disposed of properly in accordance with applicable laws and regulations.

Terrestrial vegetation and wildlife in the Onshore Project Areas have a medium sensitivity to this IPF. The IPF intensity is the same as for construction (**Very Low** to **Low**).

5.2.8 Accidental Events

5.2.8.1 Construction

When working with heavy machinery and construction equipment, there is always a chance of accidental events occurring such as spills of oils and other hazardous materials incidental to use of construction equipment, or other unforeseen events. These events, depending on their nature, will most likely be local in nature and affect only the local area surrounding the site of the accidental event. Further, these effects will be mitigated to the extent practicable through implementation of a Spill Prevention, Control, and Countermeasure (SPCC) plan to immediately contain and cleanup accidental spills of oil, fuel, or other hazardous materials.

The effects of accidental events will be direct, local, and cumulative, and they could be permanent absent clean up. With appropriate clean up, no permanent or cumulative effects are anticipated. Terrestrial vegetation and wildlife in the Onshore Project Areas have a Medium sensitivity to accidental events. The intensity of this IPF is **Low**, and **Very Low**.

5.2.8.2 Operation and Maintenance

There is a potential for accidental events to occur in each stage of the Project. Depending on the nature of the accidental event, the effects are highly variable. Operation and maintenance of the Project will not contain numerous inherent risks for accidental events. The substation and HVDC converter station facilities will have oil-filled transformers as part of the operating equipment; however, an unplanned accidental release of oil from this equipment is a low probability event. Additionally, whenever heavy machinery or other hazardous materials incidental to O&M activities is required for certain activities, there is the potential for an unplanned accidental release. Both of these potential events will have a low-severity effect due to the low probability of their occurrence coupled with mitigation measures that will be incorporated into the onshore substation facility design (such as secondary containment around transformer equipment) or the maintenance activity (such as SPCC plans).The effects are direct, permanent, local, and cumulative. Sensitivity of terrestrial vegetation and wildlife to accidental events during O&M of the Project is Medium. The intensity of this IPF is **Low**.

5.2.8.3 Decommissioning

Decommissioning would require the use of heavy machinery and construction equipment; although all appropriate BMPs would be adhered to, the nature of construction equipment could result in the injury or mortality of a natural resource(s). The sensitivity of terrestrial vegetation and wildlife to accidental events during decommissioning of Project components is medium, and the IPF intensity is the same as for construction.

5.3 Potential Risks of Effects

The potential for effects to receptors within the Onshore Project Areas associated with Project activities are expected to be of short duration, occasional in nature, and localized in geographic extent. Potential effects of the Project construction, O&M, and decommissioning were evaluated according to the methods described in Section 5.1 and are summarized in the following subsections and tables.

5.3.1 Pre-mitigation Potential for Effects

The potential risk for effects was scored initially without consideration of mitigation measures. The IPF intensity levels are expected to be **Low** or **Very Low** for the IPFs except direct injury and death during construction and decommissioning (Table 5-6 and Table 5-7) and **Low** or **Very Low** for the IPFs during O&M (Table 5-8 and Table 5-9).

5.3.2 Mitigation and Residual Effects

Measures to mitigate potential effects were considered (Table 5-6 through Table 5-9) for each IPF identified. Such measures may fall into several categories including:

- Site selection – the deliberate selection of a specific site that will minimize the effects of the Project on receptors.
- Regulatory compliance – compliance with applicable federal, state, and local regulations that will lessen the potential for effect.
- Construction methods – selection of construction methods that are less effect producing; and,
- Control measures/BMPs – measures that when employed will lessen the potential for effect (e.g., timing restrictions to avoid disturbances during sensitive time periods such as nesting).

The construction of the underground onshore export cables, the onshore substation, HVDC converter station, and underground transmission routes will require regulatory review and consultation, thus providing ample input from regulatory agencies and other stakeholders on Project design to minimize the potential for effect. The selection of construction methods that can minimize effect to sensitive receptors will be used where possible. Mayflower Wind will employ BMPs with respect to construction, operation, and decommissioning activities to reduce effects to vegetation and wildlife resources. While these BMPs will reduce the potential for and severity of effect associated with specific activities, some residual short-term risk will remain.

5.3.3 Post-mitigation Potential for Effect

With the application of mitigation measures, no long-term permanent negative effects to receptors are anticipated (Table 5-6 through Table 5-9). IPF-specific mitigation measures are discussed in Section 5.4, and are summarized in COP Section 16, Summary of Avoidance, Minimization, and Mitigation Measures of Potential Impacts.

Table 5-6. Pre- and Post-mitigation IPF Intensity for Vegetation and Wildlife for Construction and Decommissioning – Falmouth Onshore Project Area

Project Component	Resource Sensitivity	Ground Disturbance*		Introduction of Sound**		Introduction of Light**		Change In EMF**		Displacement of Biological Resources*		Direct Injury or Death*		Planned Discharges*		Unplanned Releases*	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Landing Locations																	
Worcester Avenue	VL	L-VL	L-VL	L-VL	L-VL	N	N	N	N	L-VL	N	L-VL	N	L-VL	N	L	L-VL
Shore Street	VL	L-VL	L-VL	L-VL	L-VL	N	N	N	N	L-VL	N	L-VL	N	L-VL	N	L	L-VL
Central Park	VL	L-VL	L-VL	L-VL	L-VL	N	N	N	N	L-VL	N	L-VL	N	L-VL	N	L	L-VL
Onshore Export Cable Route	VL	L-VL	L-VL	L-VL	L-VL	N	N	N	N	N	N	N	N	L-VL	N	L	L-VL
Substations Sites																	
Lawrence Lynch Site	VL	L-VL	L-VL	L	L-VL	L-VL	N	VL	N	L-VL	N	L-VL	N	L-VL	N	L	L-VL
Cape Cod Aggregates Site	VL	L-VL	L-VL	L	L-VL	L-VL	N	VL	N	L-VL	N	L-VL	N	L-VL	N	L	L-VL
Transmission																	
Underground Transmission Routes	VL	L-VL	L-VL	L-VL	L-VL	N	N	N	N	N	N	N	N	L-VL	N	L	L-VL
POI	VL	L	VL	VL	VL	VL	N	VL	N	VL	N	VL	N	VL	N	VL	N

Notes:

H=High, L=Low; M=Medium; N=None; and VL= Very low (See Table 5-2 and Table 5-3)

* IPF Intensity based on the following effect characteristics: Negative, Direct, Temporary, Short-term, Local

** IPF Intensity based on the following effect characteristics: Negative, Direct, Temporary, Short-term & Long-term, Local

Pre-Mitigation - Severity is characterized assuming no additional efforts to avoid, minimize, and mitigate effects

Post-Mitigation - Severity represents residual effect assuming implementation of mitigation measures including avoidance, minimizing, restoration, and offsetting

Table 5-7. Pre- and Post-mitigation IPF Intensity for Vegetation and Wildlife for Construction and Decommissioning – Brayton Point Onshore Project Area

Project Component	Resource Sensitivity	Ground Disturbance*		Introduction of Sound**		Introduction of Light**		Change In EMF**		Displacement of Biological Resources*		Direct Injury or Death*		Planned Discharges*		Unplanned Releases*	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Landing Locations																	
Western landfall	VL	L-VL	L-VL	L-VL	L-VL	N	N	N	N	L-VL	N	L-VL	N	L-VL	N	L	L-VL
Eastern landfall	VL	L-VL	L-VL	L-VL	L-VL	N	N	N	N	L-VL	N	L-VL	N	L-VL	N	L	L-VL
Onshore Export Cable Routes	VL	L-VL	L-VL	L-VL	L-VL	N	N	N	N	N	N	N	N	L-VL	N	L	L-VL
HVDC Converter Station Sites	VL	L-VL	L-VL	L	L-VL	L-VL	N	VL	N	L-VL	N	L-VL	N	L-VL	N	L	L-VL
Underground Transmission Route	VL	L-VL	L-VL	L-VL	L-VL	N	N	N	N	N	N	N	N	L-VL	N	L	L-VL
POI	VL	L	VL	VL	VL	VL	N	VL	N	VL	N	VL	N	VL	N	VL	N

Notes:

H=High, L=Low; M=Medium; N=None; and VL= Very low (See Table 5-2 and Table 5-3)

* IPF Intensity based on the following effect characteristics: Negative, Direct, Temporary, Short-term, Local

** IPF Intensity based on the following effect characteristics: Negative, Direct, Temporary, Short-term & Long-term, Local

Pre-Mitigation - Severity is characterized assuming no additional efforts to avoid, minimize, and mitigate effects

Post-Mitigation - Severity represents residual effect assuming implementation of mitigation measures including avoidance, minimizing, restoration, and offsetting

Table 5-8. Pre- and Post-mitigation IPF Intensity for Vegetation and Wildlife for Operations and Maintenance – Falmouth Onshore Project Area

Project Component	Resource Sensitivity	Ground Disturbance*		Introduction of Sound**		Introduction of Light**		Change In EMF**		Displacement of Biological Resources*		Direct Injury or Death*		Planned Discharges*		Unplanned Releases*	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Landing Locations																	
Worcester Avenue	VL	N	N	N	N	N	N	VL	N	N	N	N	N	N	N	N	N
Shore Street	VL	N	N	N	N	N	N	VL	N	N	N	N	N	N	N	N	N
Central Park	VL	N	N	N	N	N	N	VL	N	N	N	N	N	N	N	N	N
Onshore Export Cable Route	VL	N	N	N	N	N	N	VL	N	N	N	N	N	N	N	N	N
Substations Sites																	
Lawrence Lynch Site	VL	N	N	L	VL	VL	N	VL	N	N	N	N	N	N	N	L	VL
Cape Cod Aggregates Site	VL	N	N	L	VL	VL	N	VL	N	N	N	N	N	N	N	L	VL
Transmission																	
Underground Transmission Route	VL	N	N	N	N	N	N	VL	N	N	N	N	N	N	N	N	N
POI	VL	N	N	L	VL	VL	N	VL	N	N	N	N	N	N	N	L	VL

Notes:

H=High, L=Low; M=Medium; N=None; and VL= Very low

* IPF Intensity based on the following effect characteristics: Negative, Direct, Temporary, Short-term, Local

** IPF Intensity based on the following effect characteristics: Negative, Direct, Temporary, Short-term & Long-term, Local

Pre-Mitigation - Severity is characterized assuming no additional efforts to avoid, minimize, and mitigate effects

Post-Mitigation - Severity represents residual effect assuming implementation of mitigation measures including avoidance, minimizing, restoration, and offsetting.

Table 5-9. Pre- and Post-mitigation IPF Intensity for Vegetation and Wildlife for Operations and Maintenance – Brayton Point Onshore Project Area

Project Component	Resource Sensitivity	Ground Disturbance*		Introduction of Sound**		Introduction of Light**		Change In EMF**		Displacement of Biological Resources*		Direct Injury or Death*		Planned Discharges*		Unplanned Releases*	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Landing Locations																	
Western landfall	VL	N	N	N	N	N	N	VL	N	N	N	N	N	N	N	N	N
Eastern landfall	VL	N	N	N	N	N	N	VL	N	N	N	N	N	N	N	N	N
Onshore Export Cable Routes	VL	N	N	N	N	N	N	VL	N	N	N	N	N	N	N	N	N
HVDC Converter Station Sites	VL	N	N	L	VL	VL	N	VL	N	N	N	N	N	N	N	L	VL
Underground Transmission Route	VL	N	N	N	N	N	N	VL	N	N	N	N	N	N	N	N	N
POI	VL	N	N	L	VL	VL	N	VL	N	N	N	N	N	N	N	L	VL

Notes:

H=High, L=Low; M=Medium; N=None; and VL= Very low

* IPF Intensity based on the following effect characteristics: Negative, Direct, Temporary, Short-term, Local

** IPF Intensity based on the following effect characteristics: Negative, Direct, Temporary, Short-term & Long-term, Local

Pre-Mitigation - Severity is characterized assuming no additional efforts to avoid, minimize, and mitigate effects

Post-Mitigation - Severity represents residual effect assuming implementation of mitigation measures including avoidance, minimizing, restoration, and offsetting.

5.4 Additional Avoidance and Mitigation Efforts

Presence/absence surveys and/or jurisdictional delineations, as needed, will be completed to inform detailed engineering and design of the Project facilities. Moreover, surveys are anticipated to support future federal, state, and/or local permitting. Construction staff will be trained on biodiversity management and environmental compliance regulations.

5.4.1 Siting and Design

Through engineering design and planning, construction-related effects to the natural environment will be minimized to the greatest extent practicable. Many of the remaining Project-related effects will be isolated or temporary in nature. Temporary construction-related effects are anticipated to be minimal and will be concentrated to effects to flora and fauna that currently occupy the existing utility-owned ROW corridor.

Construction-related disturbances (e.g., launching and receiving pits, construction pads, laydown areas, and access roads [if needed], etc.) will be sited to mitigate effects on sensitive resources to the greatest extent practicable.

5.4.2 Avoidance and Impact Minimization Measures

Avoidance and Impact Minimization (AIM) measures will be implemented to limit Project-related effects on the natural environment. Mayflower Wind has designed the Project to be located within previously developed or disturbed lands to the extent practicable, thereby avoiding, minimizing, and mitigating effects on undisturbed natural habitats preferentially used by wildlife. At the commencement of construction, a contractor training program will be implemented to educate the construction contractor personnel on required regulatory and environmental compliance conditions and procedures committed to by Mayflower Wind to avoid, minimize or mitigate potential environmental effects from construction of the Project. The subsections below identify AIM measures for the Project. Work within utility ROWs will be conducted in a manner consistent with existing BMPs.

5.4.2.1 Habitat Avoidance and Vegetation Removal

Sensitive habitats or fragmenting of large contiguous undisturbed habitats will be avoided, minimized, or mitigated to the greatest extent practicable. Mayflower Wind will use HDD technology to go underneath habitat to reduce or eliminate effects. When practicable, the HDD would be placed under paved areas.

As the design progresses, efforts will be made to minimize tree clearing. Using existing public roadways or other previously disturbed areas for the underground cables will allow Mayflower Wind to significantly reduce tree clearing effects. If any tree clearing is required, habitat assessments and presence/absence surveys will be coordinated with federal and state agencies, as appropriate.

5.4.2.2 Spill Prevention and Unexpected Discharge Avoidance

Consistent with established BMPs, refueling of equipment will be prohibited within 100 ft (30 m) of wetlands or other waterbodies to avoid a direct accidental release of hazardous materials to these sensitive water resources. Where moving a piece of equipment to refuel it is impractical due to its size and/or limited mobility (i.e., a tracked crane or “crawler crane”), then refueling within 100 ft (30 m) of wetlands or other waterbodies will be allowed to occur with a secondary containment system setup beneath the fuel fill and tank of the equipment to contain minor amounts of fuel that are inadvertently dripped or release during refueling. Additionally, Mayflower Wind will require that their construction contractor have spill control and containment kits onsite to allow for immediate response and cleanup in the event of an accidental release of fuel, oils, or other hazardous materials.

During concrete foundation pouring activities, cement cleanout tubs will be setup in areas at least 100 ft (30 m) from wetlands or other water resources to contain and hold residual cement and washout from cement trucks prior to their departure from the site. The washout water will be allowed to evaporate, and the residual

cement allowed to harden within the containment tubs, after which the hardened cement will be disposed of offsite at an appropriate receiving facility similar to other construction debris.

5.4.2.3 Wildlife Avoidance

In order to avoid interactions with protected wildlife, it is anticipated the following procedures will be followed (if deemed necessary):

- Pre-construction surveys – For threatened, endangered, or species of concern, presence/absence surveys will be conducted within suitable habitats prior to construction. If the species[4] are located, the organism will be moved outside of the designated workspace by a wildlife handler with the appropriate certifications. The species will be placed in a similar habitat, and if required by the regulatory agencies, marked, tagged, noted, etc. as per regulatory agencies' instructions. Mayflower Wind will also complete and submit any required documentation (e.g., rare species identification form, etc.) per incident.
- Contractor training – At the start of construction, the construction contractor personnel will be trained on environmental compliance requirements for the Project. Additionally, a detailed protocol will be established to direct contractors as to the appropriate course of action to be taken if protected species are encountered.
- Vehicle speeds – Vehicle speed limits will be enforced at all Project sites to minimize potential for vehicle collisions with wildlife.

These measures will reduce the likelihood of effects on protected species from Project-related activities. Mayflower Wind will continue to engage federal and state wildlife agencies in order to implement BMPs.

5.4.2.4 Timing and Time of Year Restrictions

To the extent possible, construction activities will be conducted outside of periods when highly sensitive species are likely to be present. Mayflower Wind will adhere to all timing restrictions to reduce the potential effect to protected wildlife. Much, if not all of the timing and time of year restrictions will be identified as conditions in future permitting. These timing restrictions may include, but not be limited to:

- Illumination of equipment at night to avoid bird strikes.
- Clearing of trees (if required) in the colder months of the year to reduce effects on bats and birds. An example of this is adherence to the USFWS 4(d) rule. This rule includes effect avoidance and minimization measures for northern long-eared bats such as seasonal restrictions on tree clearing to avoid cutting trees during the pup rearing season from June 1 to July 31 in a calendar year.
- Avoidance of construction near known raptor nests during nesting periods.

5.4.2.5 Sediment and Erosion Control and Dewatering

During ground disturbing activities required for construction of the Project facilities, erosion and sediment control measures will be implemented in areas adjacent to water resources, such as wetlands, ponds, and other waterbodies, or in areas with significant grades that will make them prone to erosion. These erosion and sediment controls will minimize the potential for effects on vegetation and wildlife resources outside of the disturbed areas being used for construction activities as a result of stormwater runoff originating from the Project workspaces. If groundwater is encountered, dewatering will be performed using standard construction BMPs for dewatering, including (but not limited to) use of temporary settling basins, dewatering filter bags, or temporary holding tanks (frac tanks). Discharge of dewatering wastewaters will be directed to well-vegetated uplands away from wetlands or other water resources to

[4] Species to be removed are anticipated to be slower moving reptiles and amphibians. For bird species, nesting locations will be noted and appropriate AIM measures to reduce effects would be adhered to. If required by the regulatory agencies, Mayflower Wind would trap and relocate more motile species, if required.

allow for infiltration to the soil of the discharged water. This will minimize the potential for affecting vegetation and wildlife resources outside of the disturbed areas being used for construction activities.

Construction mats will be placed to minimize soil disturbance in wetland areas that cannot be avoided or are required to be temporarily crossed. This will protect water quality within the wetland and prevent soil compaction.

5.4.2.6 Environmental Compliance

Environmental compliance inspections will be conducted during construction activities to monitor compliance and report to the contractor and Mayflower Wind on the need for repairs or additional erosion and sediment controls that may be required. The inspections will document compliance with other required conditions and allow for identification to Mayflower Wind and the construction contractor of potential non-compliance situations before they occur so that such events can be avoided. A vegetation monitoring plan will be implemented and approved by the appropriate state regulatory agencies (e.g., NHESP and the Massachusetts Department of Agricultural Resources, and RIDEM).

Mayflower Wind will continue to work with the regulatory agencies for development of AIM strategies to support the Project.

5.4.3 Site Restoration

Following completion of construction activities, Mayflower Wind will restore the Project site through removal of debris, equipment, construction mats as well as revegetation of work areas or other disturbed areas. Repaving will occur along the underground cable section to restore area roadways. Seeding, mulching, or other stabilization measures will be implemented on disturbed areas where necessary. Dependent upon consultation with the regulatory agencies in Massachusetts and Rhode Island, restored work pad areas may remain as open sandy soil areas to provide preferred habitat for certain protected species known to occur in the vicinity of the Project.

5.4.4 Positive Impacts

Some effects to vegetation and wildlife may have a net positive effect, particularly for select birds and other insects and reptile species that rely on early successional habitats, such as grasslands and shrub lands.

5.4.5 Monitoring and Inspection

Mayflower Wind anticipates the execution of certain pre-construction, construction, and post-construction monitoring programs. Pre-construction monitoring may include surveys to document presence/absence of protected species to minimize effects on those species with siting and design to avoid critical habitats or with temporary relocation of individuals during construction. Monitoring and inspection during construction will be aimed at conformance with applicable permit conditions through the consistent application of appropriate BMPs. Post-construction monitoring may be aimed at demonstration of destabilization, achievement of restored conditions, or recovery of affected resources. Mayflower Wind anticipates that the required monitoring programs will be developed through consultation with resource and regulatory agencies.

6.0 Conclusions

Most of the Project components will be installed within disturbed roadway ROWs. This would have minimal to imperceptible impacts to the flora, fauna, and/or habitats of either the Falmouth Onshore Project Area and/or Brayton Point Onshore Project Area. After mitigation, if required by the regulatory agencies, the overall potential effect to terrestrial vegetation and wildlife resources as a result of construction, O&M, and decommissioning of the onshore facilities for the Project will have an effect severity of None to Low. This includes potential effects from Project-related activities both before and after mitigation strategies are implemented to avoid, minimize, or mitigate effects to vegetation and wildlife resources. Low effect severity includes minor adverse changes in an ecosystem or protected species. Changes might be noticeable but fall within the range of normal variation. Effects are short-lived and natural recovery takes place in the short term; however, it is recognized that a low level of localized effect may remain.

Mayflower Wind has incorporated effect avoidance and minimization measures into the initial planning, siting, and design phases of the Project facilities, including siting the Project facilities within existing, previously disturbed habitats to the maximum extent practicable. Additionally, where possible and appropriate, specific mitigation measures will be implemented to further avoid, minimize, or mitigate the potential for effects to vegetation and wildlife resources associated with the construction, operation, and decommissioning of the onshore facilities. However, some amount of localized effect to terrestrial vegetation and the wildlife resources that use these habitats are unavoidable when conducting even minor vegetation clearing or mowing, ground disturbance, and operation of heavy machinery necessary for construction, O&M, or decommissioning of the facilities. Also, the simple presence of the facilities within the Falmouth and Brayton Point Onshore Project Areas will have at least some minor effect on local wildlife resources either in alteration of their behavior, or by altering or removing even minor amounts of certain habitat cover types at the substation/HVDC converter station and POI facilities. However, for most of these minor effects to vegetation and wildlife resources, the effects will be temporary, short-term, and local in nature.

Mayflower Wind has initiated consultation with the Massachusetts NHESP and the RIDEM Natural Heritage Program to determine the presence or likely presence of federal and state-listed species on or in the vicinity of the Project. Mayflower Wind will continue to coordinate with the agencies to determine appropriate avoidance and minimization measures to prevent effects to protected species as a result of the Project. Additionally, Mayflower Wind will conduct presence/absence surveys, as necessary, for certain species within the Project workspaces to determine if protected or rare species occur in these areas, and if so, incorporate design modifications or other measures to avoid effects to these species. Through implementation of such measures, it is anticipated that potential effects to protected and rare species as a result of construction, O&M, and decommissioning of the Project will be minimized to the maximum extent practicable.

Based on the very low effect severity (None to Low) to terrestrial vegetation and wildlife resources expected to occur as a result of the Project coupled with appropriate mitigation measures that have been incorporated into the Project design and will be implemented during construction, O&M, and decommissioning of the Project facilities, it is anticipated that effects are likely to be short-lived, fall within the range of normal variation, and that natural recovery will be able to take place in the short term.

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Attachment 1 - Falmouth Onshore Project Area IPaC Report. August 5, 2021

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

IPaC Record Locator: 403-104550002 August 09, 2021

Subject: Consistency letter for the 'Mayflower Wind - Falmouth Landings' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Walter McKenna:

The U.S. Fish and Wildlife Service (Service) received on August 09, 2021 your effects determination for the 'Mayflower Wind - Falmouth Landings' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

The IPaC-assisted determination for the northern long-eared bat **does not** apply to the following ESA-protected species that also may occur in your Action area:

- American Chaffseed *Schwalbea americana* Endangered
- Roseate Tern *Sterna dougallii dougallii* Endangered

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species listed above.

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[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Mayflower Wind - Falmouth Landings

2. Description

The following description was provided for the project 'Mayflower Wind - Falmouth Landings':

> The Mayflower Wind Project includes a Lease Area located in federal waters south of Martha's Vineyard and Nantucket. Wind turbine generators constructed within the Lease Area will deliver power via inter-array cables to the offshore substation platforms. Submarine offshore export cables will be installed within offshore export cable corridors to carry the electricity to the onshore transmission systems. The export cables will make landfall in Falmouth, Massachusetts via horizontal directional drilling. From the landfall, underground onshore export cables will extend to a new onshore substation which will be installed within existing paved roadways and shoulder. The new Falmouth onshore substation will step up the voltage to 345 kilovolts to enable connection to an underground transmission route. The proposed Falmouth point of interconnection to the regional transmission system is an existing switching station.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.58427575,-70.60022065,14z

Determination Key Result

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule
This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   No

2. Will your activity purposefully **Take** northern long-eared bats?

   No

3. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

6. Will the action involve Tree Removal?

   Yes

7. Will the action only remove hazardous trees for the protection of human life or property?

   No

8. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

9. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

2.753

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

United States Department of the Interior

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In Reply Refer To: August 09, 2021
Consultation Code: 05E1NE00-2021-SLI-4341
Event Code: 05E1NE00-2021-E-13293
Project Name: Mayflower Wind - Falmouth Landings

Subject: Updated list of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2021-SLI-4341
Event Code: 05E1NE00-2021-E-13293
Project Name: Mayflower Wind - Falmouth Landings
Project Type: TRANSMISSION LINE
Project Description: The Mayflower Wind Project includes a Lease Area located in federal waters south of Martha's Vineyard and Nantucket. Wind turbine generators constructed within the Lease Area will deliver power via inter-array cables to the offshore substation platforms. Submarine offshore export cables will be installed within offshore export cable corridors to carry the electricity to the onshore transmission systems. The export cables will make landfall in Falmouth, Massachusetts via horizontal directional drilling. From the landfall, underground onshore export cables will extend to a new onshore substation which will be installed within existing paved roadways and shoulder. The new Falmouth onshore substation will step up the voltage to 345 kilovolts to enable connection to an underground transmission route. The proposed Falmouth point of interconnection to the regional transmission system is an existing switching station.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.58427575,-70.60022065,14z

Counties: Barnstable County, Massachusetts

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Roseate Tern *Sterna dougallii dougallii* Population: Northeast U.S. nesting population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

Flowering Plants

NAME	STATUS
American Chaffseed *Schwalbea americana* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1286	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Mayflower Wind - Falmouth Landings

LOCATION

Barnstable County, Massachusetts

DESCRIPTION

Some(The Mayflower Wind Project includes a Lease Area located in federal waters south of Martha's Vineyard and Nantucket. Wind turbine generators constructed within the Lease Area will deliver power via inter-array cables to the offshore substation platforms. Submarine offshore export cables will be installed within offshore export cable corridors to carry the electricity to the onshore transmission systems. The export cables will make landfall in Falmouth, Massachusetts via horizontal directional drilling. From the landfall, underground onshore export cables will extend to a new onshore substation which will be installed within existing paved roadways and shoulder. The new Falmouth onshore substation will step up the

voltage to 345 kilovolts to enable connection to an underground transmission route. The proposed Falmouth point of interconnection to the regional transmission system is an existing switching station.)

Local office

New England Ecological Services Field Office

(603) 223-2541
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http://www.fws.gov/newengland

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Roseate Tern Sterna dougallii dougallii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2083	Endangered

Flowering Plants

NAME	STATUS
American Chaffseed Schwalbea americana Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1286	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php

- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
American Oystercatcher Haematopus palliatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Arctic Tern Sterna paradisaea This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds May 20 to Aug 15

Bald Eagle Haliaeetus leucocephalus — Breeds Oct 15 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Black Guillemot Cepphus grylle — Breeds May 15 to Sep 10
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Black Scoter Melanitta nigra — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Black-billed Cuckoo Coccyzus erythropthalmus — Breeds May 15 to Oct 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9399

Black-legged Kittiwake Rissa tridactyla — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Bobolink Dolichonyx oryzivorus — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Bonaparte's Gull Chroicocephalus philadelphia — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Canada Warbler Cardellina canadensis — Breeds May 20 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Clapper Rail Rallus crepitans — Breeds Apr 10 to Oct 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Common Eider Somateria mollissima — Breeds Jun 1 to Sep 30

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Common Loon gavia immer — Breeds Apr 15 to Oct 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4464

Common Murre Uria aalge — Breeds Apr 15 to Aug 15

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Common Tern Sterna hirundo — Breeds May 10 to Sep 10

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4963

Double-crested Cormorant phalacrocorax auritus — Breeds Apr 20 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/3478

Dovekie Alle alle — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/6041

Dunlin Calidris alpina arcticola — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Eastern Whip-poor-will Antrostomus vociferus — Breeds May 1 to Aug 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Evening Grosbeak Coccothraustes vespertinus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Great Black-backed Gull Larus marinus — Breeds Apr 15 to Aug 20
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Great Shearwater Puffinus gravis — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Herring Gull Larus argentatus — Breeds Apr 20 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Hudsonian Godwit Limosa haemastica — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Kentucky Warbler Oporornis formosus — Breeds Apr 20 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Leach's Storm-petrel Oceanodroma leucorhoa — Breeds May 15 to Nov 20
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Least Tern Sterna antillarum — Breeds Apr 20 to Sep 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Long-tailed Duck Clangula hyemalis — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/7238

Nelson's Sparrow Ammodramus nelsoni — Breeds May 15 to Sep 5

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Northern Gannet Morus bassanus — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Parasitic Jaeger Stercorarius parasiticus — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Prairie Warbler Dendroica discolor — Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Purple Sandpiper Calidris maritima — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Razorbill Alca torda — Breeds Jun 15 to Sep 10

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-breasted Merganser Mergus serrator — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-throated Loon Gavia stellata — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Ring-billed Gull Larus delawarensis — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Roseate Tern Sterna dougallii — Breeds May 10 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Royal Tern Thalasseus maximus — Breeds Apr 15 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Ruddy Turnstone Arenaria interpres morinella — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Rusty Blackbird Euphagus carolinus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Seaside Sparrow Ammodramus maritimus — Breeds May 10 to Aug 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Semipalmated Sandpiper Calidris pusilla — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Snowy Owl Bubo scandiacus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Surf Scoter Melanitta perspicillata — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Thick-billed Murre Uria lomvia — Breeds Apr 15 to Aug 15
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Whimbrel Numenius phaeopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

White-winged Scoter Melanitta fusca — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Willet Tringa semipalmata — Breeds Apr 20 to Aug 5
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

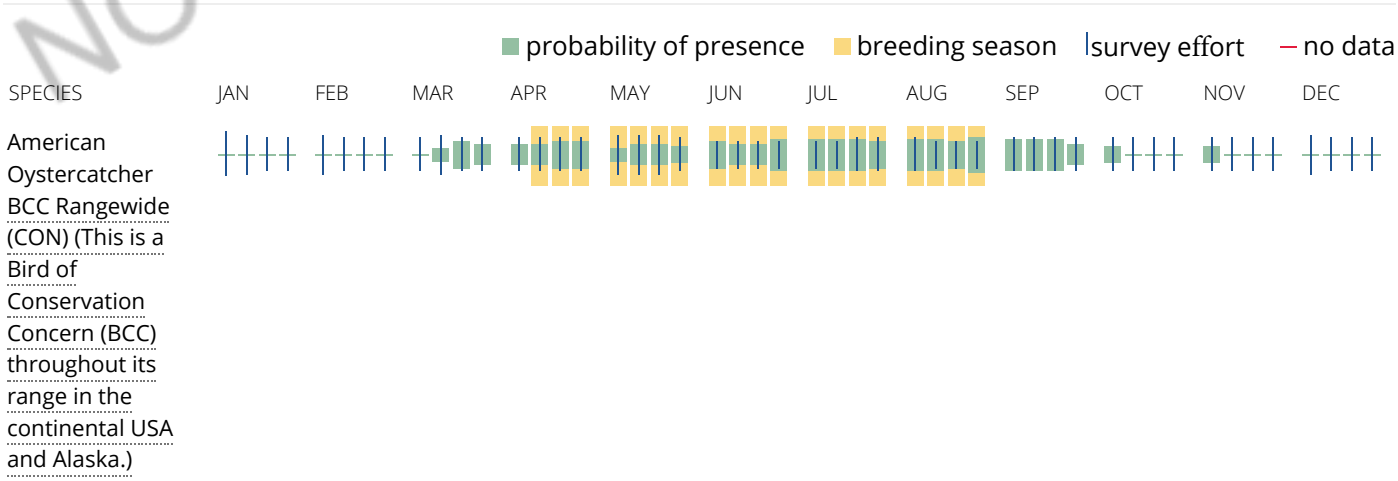
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

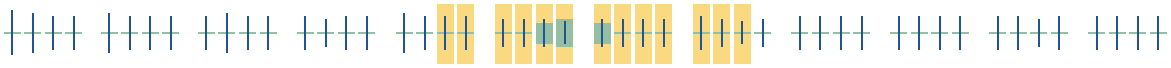
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

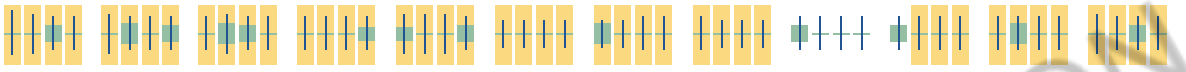
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Arctic Tern
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



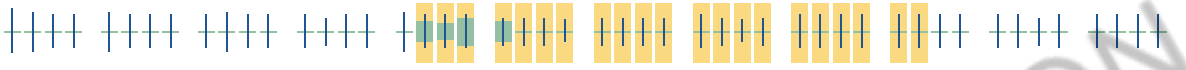
Bald Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offShore areas from certain types of development or activities.)



Black Guillemot
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

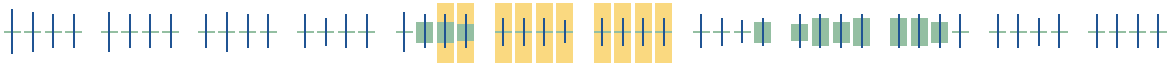
Black Scoter
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

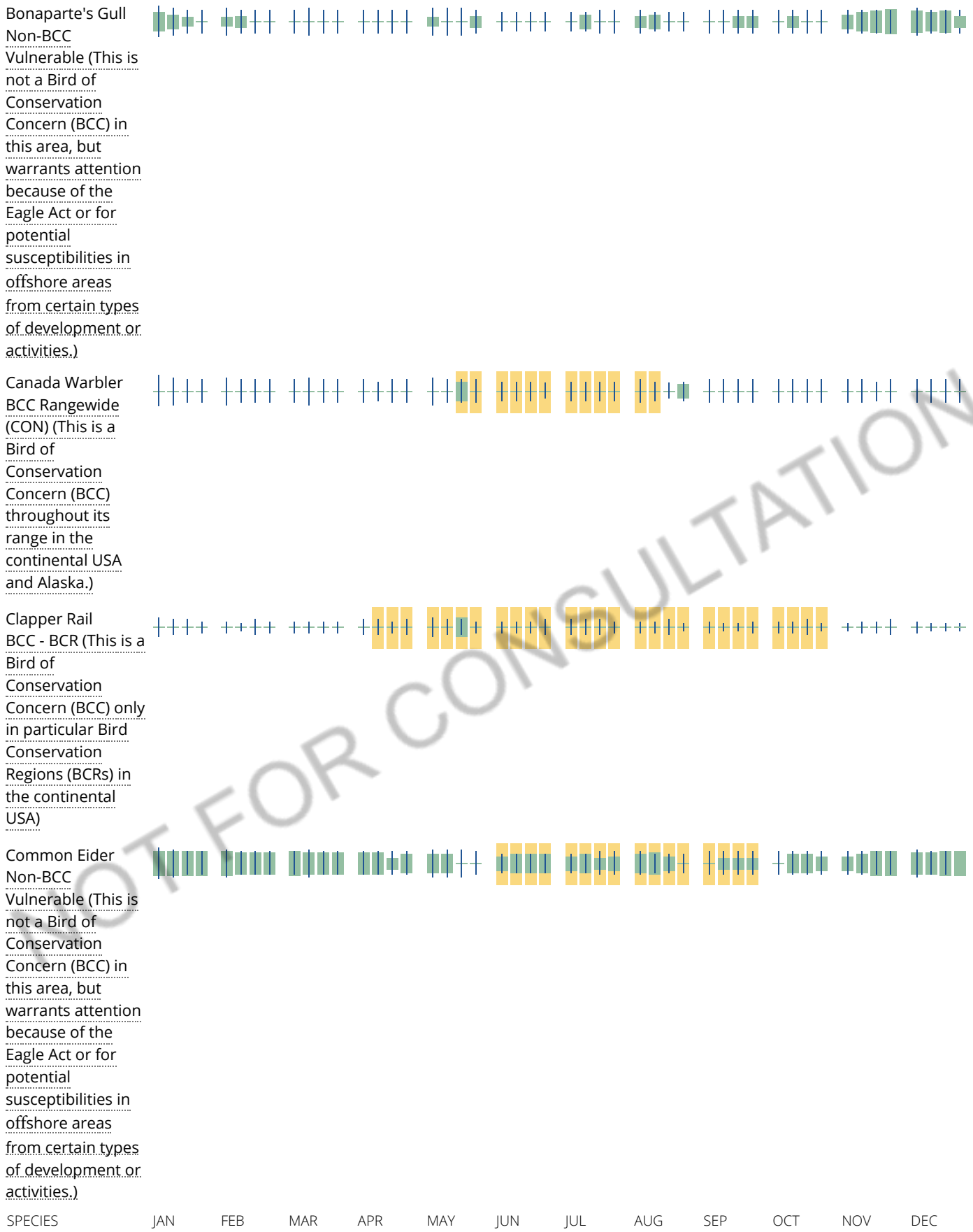
Black-billed Cuckoo
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Black-legged Kittiwake
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

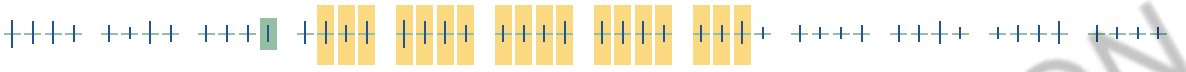
Bobolink
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)





Common Loon Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Common Murre Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Common Tern Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Double-crested Cormorant
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Dovekie
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Dunlin
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Eastern Whip-poor-will
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Evening Grosbeak BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Great Black-backed Gull Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Great Shearwater Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Herring Gull Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Hudsonian Godwit BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

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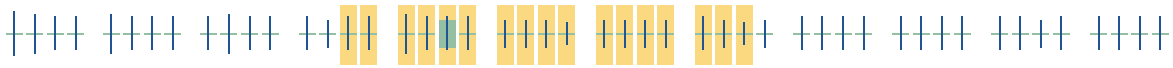
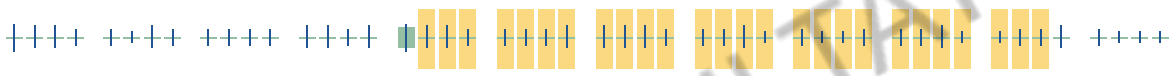
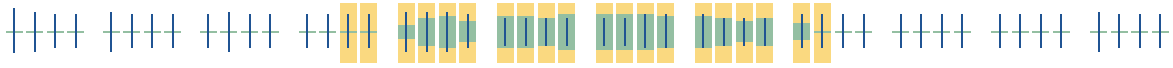
Kentucky Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Leach's Storm-petrel Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



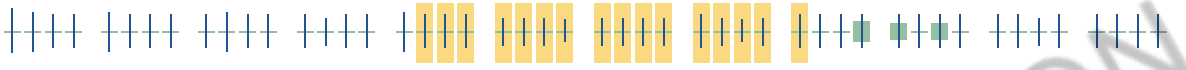
Least Tern BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Lesser Yellowlegs BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

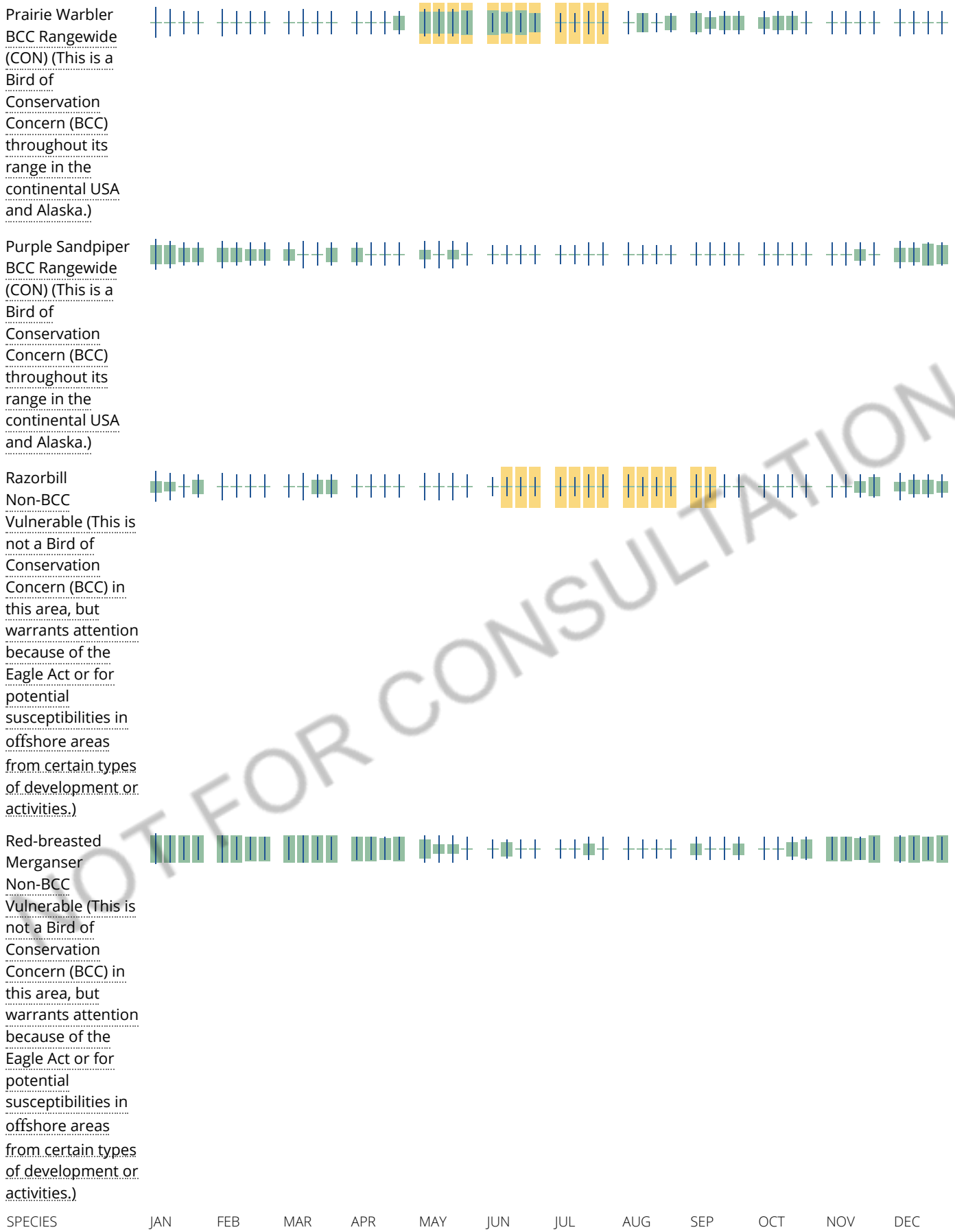
Long-tailed Duck Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Nelson's Sparrow BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Northern Gannet Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

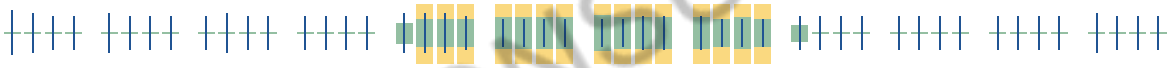
Parasitic Jaeger Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



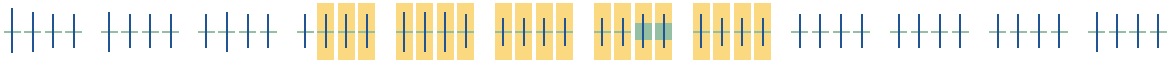
Red-throated Loon BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Ring-billed Gull Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Roseate Tern Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



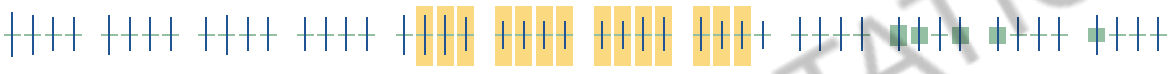
Royal Tern Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Ruddy Turnstone BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Rusty Blackbird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Seaside Sparrow BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



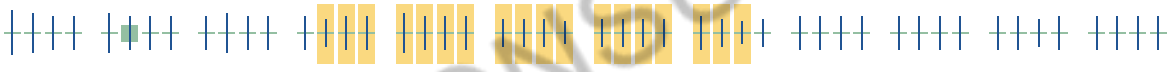
Semipalmated Sandpiper BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Short-billed Dowitcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Snowy Owl BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Surf Scoter Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Thick-billed Murre Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



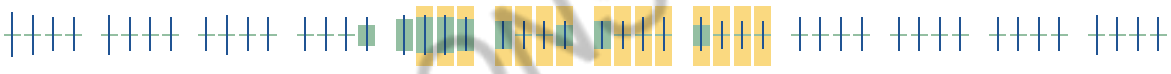
SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Whimbrel BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

White-winged Scoter Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Willet BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Wood Thrush BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project

intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

ESTUARINE AND MARINE DEEPWATER

- M1UBL
- E1UBL
- E1UBLx

ESTUARINE AND MARINE WETLAND

- E2EM1P
- E2USM
- M2USP
- M2USN
- E2USP
- E2EM1N
- E2USN
- E2SS1P

FRESHWATER EMERGENT WETLAND

- PEM1Ed
- PEM1F
- PEM1A
- PEM1Fd
- PEM1R
- PEM1E
- PEM1C

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1E
- PSS1E
- PFO1/4E
- PFO4E
- PFO1R
- PFO4Eg
- PSS1Ed
- PSS1R
- PFO1/SS1E
- PFO1A
- PFO1/4B
- PSS1C
- PFO1C

PFO1Ch
PFO1F
PFO1Ed
PSS1Ch
PSS1F
PSS1Ex

FRESHWATER POND

PUBH
PUBHh
PUBHx
PABF
PABKx
PABH
PUBKx
PUBVx

LAKE

L1UBH
L1UBHh

OTHER

Pf

RIVERINE

R5UBH
R2UBHx
R4SBC
R1UBV
R2UBH
R4SBCx
R5UBFx

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Attachment 2 - Brayton Point Onshore Project Area IPaC Report. June 29, 2021

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: June 23, 2021
Consultation Code: 05E1NE00-2021-SLI-3915
Event Code: 05E1NE00-2021-E-11848
Project Name: Mayflower Wind - Lower Narragansett

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2021-SLI-3915
Event Code: 05E1NE00-2021-E-11848
Project Name: Mayflower Wind - Lower Narragansett
Project Type: POWER GENERATION
Project Description: Mayflower Wind Energy LLC (Mayflower Wind) is currently in the planning process for a new offshore wind renewable energy generation project located within federal lease area OCS-A 0521. The Lease Area is approximately 127,388 acres (51,552 hectares) located in federal waters off the southern coast of Massachusetts, approximately 26 nautical miles (nm) (48 kilometers [km]) south of the island of Martha's Vineyard and 20 nm (37 km) south of Nantucket, Massachusetts. There will be up to 149 positions in the Lease Area to be occupied by wind turbine generators (WTG) and offshore substation platforms (OSP). Construction is anticipated to commence between 2023 and 2025, after all necessary permits and authorizations have been obtained. At present, Mayflower Wind is evaluating an export cable route through Rhode Island state waters up the Sakonnet River, across Aquidneck island to Mt. Hope Bay, and north to Brayton Point in Somerset, MA.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.4217341,-71.20983380255737,14z

Counties: Newport County, Rhode Island

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Red Knot *Calidris canutus rufa* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Roseate Tern *Sterna dougallii dougallii* Population: Northeast U.S. nesting population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Mayflower Wind - Lower Narragansett

LOCATION

Newport County, Rhode Island

DESCRIPTION

Some(Mayflower Wind Energy LLC (Mayflower Wind) is currently in the planning process for a new offshore wind renewable energy generation project located within federal lease area OCS-A 0521. The Lease Area is approximately 127,388 acres (51,552 hectares) located in federal waters off the southern coast of Massachusetts, approximately 26 nautical miles (nm) (48 kilometers [km]) south of the island of Martha's Vineyard and 20 nm (37 km) south of Nantucket, Massachusetts. There will be up to 149 positions in the Lease Area to be occupied by wind turbine generators (WTG) and offshore substation platforms (OSP). Construction is anticipated to commence between 2023 and 2025, after all necessary permits and authorizations have been

obtained. At present, Mayflower Wind is evaluating an export cable route through Rhode Island state waters up the Sakonnet River, across Aquidneck island to Mt. Hope Bay, and north to Brayton Point in Somerset, MA.)

Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

http://www.fws.gov/newengland

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Northern Long-eared Bat Myotis septentrionalis — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Birds

NAME	STATUS
Red Knot Calidris canutus rufa	Threatened
Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1864	
Roseate Tern Sterna dougallii dougallii	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2083	

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Black Guillemot Cepphus grylle This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds May 15 to Sep 10
Black Scoter Melanitta nigra This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Black-legged Kittiwake Rissa tridactyla This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere

Bonaparte's Gull Chroicocephalus philadelphia — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Common Eider Somateria mollissima — Breeds Jun 1 to Sep 30

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Common Loon gavia immer — Breeds Apr 15 to Oct 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4464

Common Tern Sterna hirundo — Breeds May 10 to Sep 10

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4963

Cory's Shearwater Calonectris diomedea — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Double-crested Cormorant phalacrocorax auritus — Breeds Apr 20 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/3478

Dovekie Alle alle — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/6041

Great Black-backed Gull Larus marinus — Breeds Apr 15 to Aug 20

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Herring Gull Larus argentatus — Breeds Apr 20 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Least Tern Sterna antillarum — Breeds Apr 20 to Sep 10

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Long-tailed Duck Clangula hyemalis — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/7238

Northern Gannet Morus bassanus — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Razorbill Alca torda — Breeds Jun 15 to Sep 10

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-breasted Merganser Mergus serrator — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-throated Loon Gavia stellata — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Ring-billed Gull Larus delawarensis — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Roseate Tern Sterna dougallii — Breeds May 10 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Royal Tern Thalasseus maximus — Breeds Apr 15 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Surf Scoter Melanitta perspicillata — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Thick-billed Murre Uria lomvia — Breeds Apr 15 to Aug 15
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

White-winged Scoter Melanitta fusca — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Wilson's Storm-petrel Oceanites oceanicus — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ

"Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

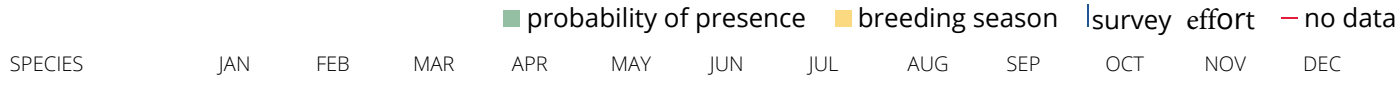
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

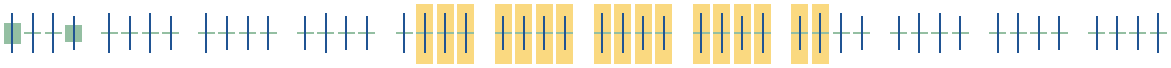
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

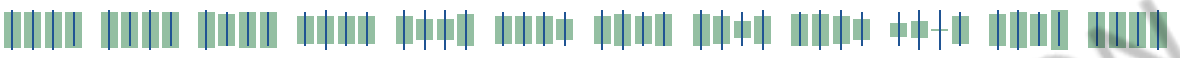
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Black Guillemot
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



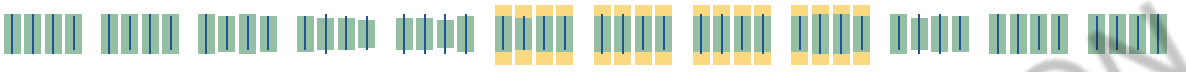
Black Scoter
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



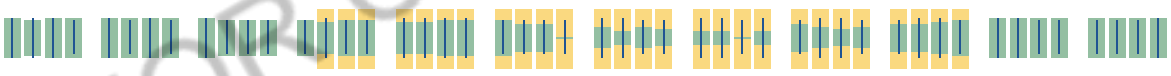
Black-legged Kittiwake
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offShore areas from certain types of development or activities.)

Bonaparte's Gull
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in o oshore areas from certain types of development or activities.)

Common Eider
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



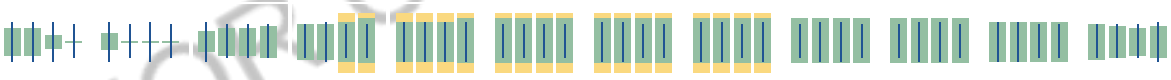
Common Loon
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

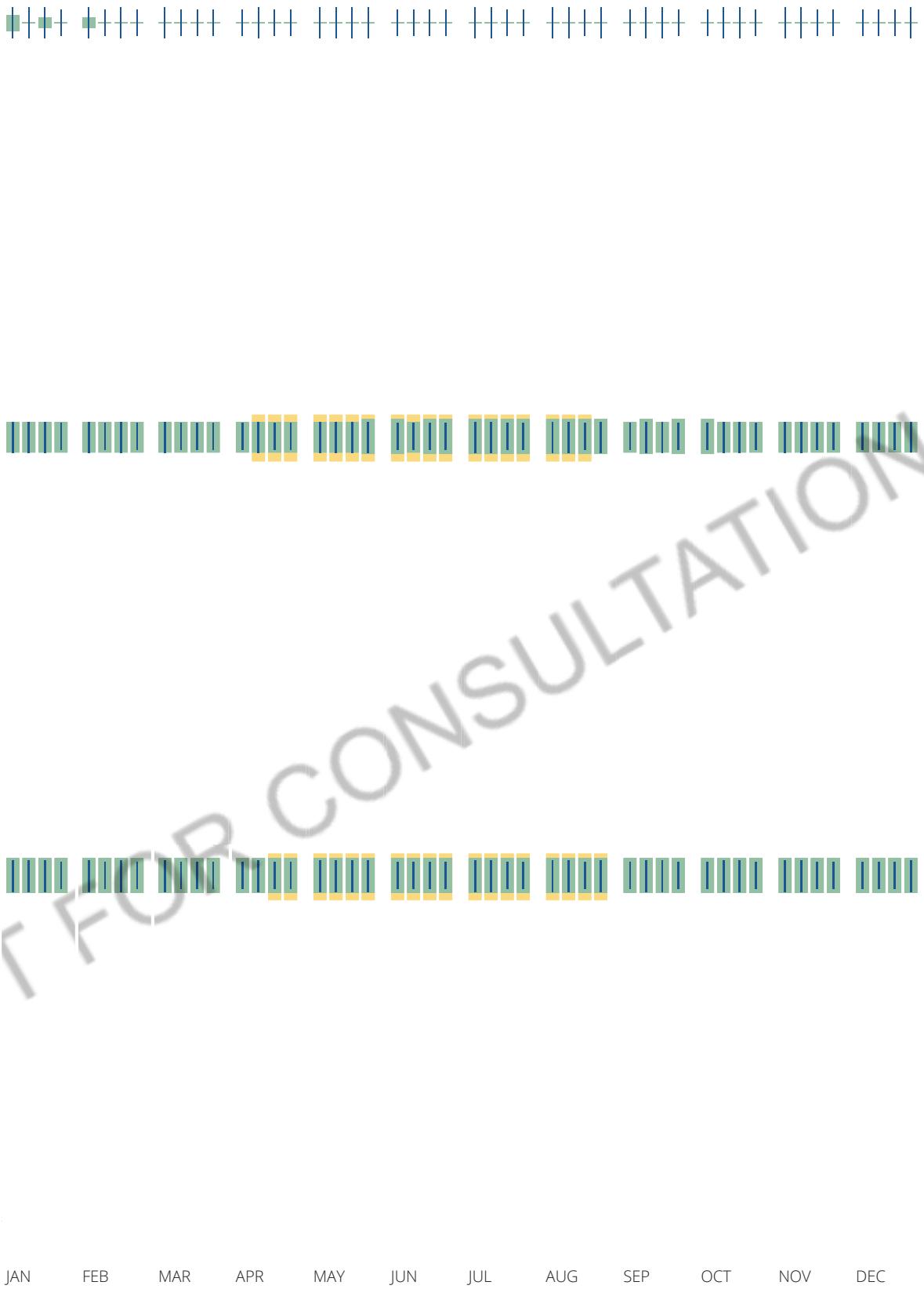


Common Tern
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

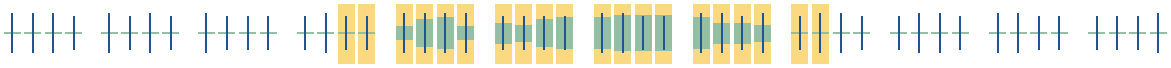
Cory's Shearwater
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Double-crested Cormorant
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)





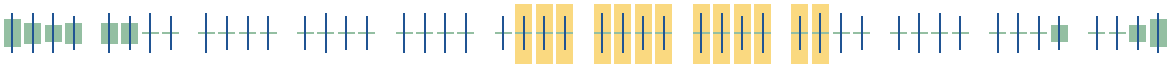
Least Tern
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Long-tailed Duck
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Northern Gannet
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Razorbill Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

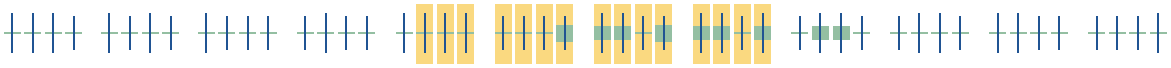


Red-breasted Merganser Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

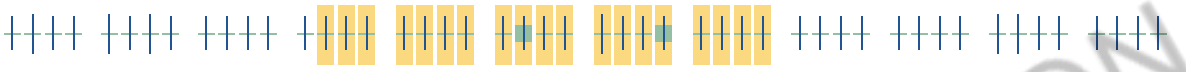
Red-throated Loon BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Ring-billed Gull Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Roseate Tern
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Royal Tern
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Surf Scoter
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Thick-billed Murre
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

White-winged Scoter
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Wilson's Storm-petrel
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to

occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

ESTUARINE AND MARINE DEEPWATER

- M1UBL
- E1UBL

ESTUARINE AND MARINE WETLAND

- M2US2P
- M2RS1P
- E2US2P
- M2RS1N
- M2US1P

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: June 23, 2021
Consultation Code: 05E1NE00-2021-SLI-3914
Event Code: 05E1NE00-2021-E-11846
Project Name: Mayflower Wind - Sakonnet River and Mount Hope Bay

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2021-SLI-3914
Event Code: 05E1NE00-2021-E-11846
Project Name: Mayflower Wind - Sakonnet River and Mount Hope Bay
Project Type: POWER GENERATION
Project Description: Mayflower Wind Energy LLC (Mayflower Wind) is currently in the planning process for a new offshore wind renewable energy generation project located within federal lease area OCS-A 0521. The Lease Area is approximately 127,388 acres (51,552 hectares) located in federal waters off the southern coast of Massachusetts, approximately 26 nautical miles (nm) (48 kilometers [km]) south of the island of Martha's Vineyard and 20 nm (37 km) south of Nantucket, Massachusetts. There will be up to 149 positions in the Lease Area to be occupied by wind turbine generators (WTG) and offshore substation platforms (OSP). Construction is anticipated to commence between 2023 and 2025, after all necessary permits and authorizations have been obtained. At present, Mayflower Wind is evaluating an export cable route through Rhode Island state waters up the Sakonnet River, across Aquidneck island to Mt. Hope Bay, and north to Brayton Point in Somerset, MA.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.58666325,-71.22882287099316,14z

Counties: Massachusetts and Rhode Island

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot *Calidris canutus rufa* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Roseate Tern *Sterna dougallii dougallii* Population: Northeast U.S. nesting population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

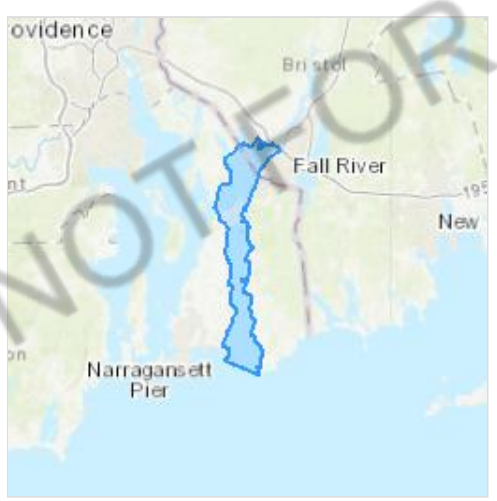
Project information

NAME

Mayflower Wind - Sakonnet River and Mount Hope Bay

LOCATION

Massachusetts and Rhode Island



DESCRIPTION

Some(Mayflower Wind Energy LLC (Mayflower Wind) is currently in the planning process for a new offshore wind renewable energy generation project located within federal lease area OCS-A 0521. The Lease Area is approximately 127,388 acres (51,552 hectares) located in federal waters off the southern coast of Massachusetts, approximately 26 nautical miles (nm) (48 kilometers [km]) south of the island of Martha's Vineyard and 20 nm (37 km) south of Nantucket, Massachusetts. There will be up to 149 positions in the Lease Area to be occupied by wind turbine generators (WTG) and offshore substation platforms (OSP). Construction is anticipated to commence between 2023 and 2025, after all necessary permits and authorizations have been

obtained. At present, Mayflower Wind is evaluating an export cable route through Rhode Island state waters up the Sakonnet River, across Aquidneck island to Mt. Hope Bay, and north to Brayton Point in Somerset, MA.)

Local office

New England Ecological Services Field office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

http://www.fws.gov/newengland

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Piping Plover Charadrius melodus There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot Calidris canutus rufa Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1864	Threatened
Roseate Tern Sterna dougallii dougallii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2083	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php

- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
American Oystercatcher Haematopus palliatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31

Black Guillemot Cepphus grylle — Breeds May 15 to Sep 10
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Black Scoter Melanitta nigra — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Black Skimmer Rynchops niger — Breeds May 20 to Sep 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5234

Black-billed Cuckoo Coccyzus erythropthalmus — Breeds May 15 to Oct 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9399

Bobolink Dolichonyx oryzivorus — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Bonaparte's Gull Chroicocephalus philadelphia — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Buff-breasted Sandpiper Calidris subruficollis — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9488

Canada Warbler Cardellina canadensis — Breeds May 20 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Eider Somateria mollissima — Breeds Jun 1 to Sep 30
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Common Loon gavia immer — Breeds Apr 15 to Oct 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4464

Common Tern Sterna hirundo — Breeds May 10 to Sep 10

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4963

Double-crested Cormorant phalacrocorax auritus — Breeds Apr 20 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/3478

Dovekie Alle alle — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/6041

Dunlin Calidris alpina arcticola — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Evening Grosbeak Coccothraustes vespertinus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Great Black-backed Gull Larus marinus — Breeds Apr 15 to Aug 20

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Herring Gull Larus argentatus — Breeds Apr 20 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Least Tern Sterna antillarum — Breeds Apr 20 to Sep 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Long-eared Owl asio otus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3631

Long-tailed Duck Clangula hyemalis — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/7238

Nelson's Sparrow Ammodramus nelsoni — Breeds May 15 to Sep 5
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Northern Gannet Morus bassanus — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Prairie Warbler Dendroica discolor — Breeds May 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Purple Sandpiper Calidris maritima — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Razorbill Alca torda — Breeds Jun 15 to Sep 10
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-breasted Merganser Mergus serrator — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-throated Loon Gavia stellata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Ring-billed Gull Larus delawarensis — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Roseate Tern Sterna dougallii — Breeds May 10 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Royal Tern Thalasseus maximus — Breeds Apr 15 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Ruddy Turnstone Arenaria interpres morinella — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Rusty Blackbird Euphagus carolinus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Seaside Sparrow Ammodramus maritimus — Breeds May 10 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Semipalmated Sandpiper Calidris pusilla — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Snowy Owl Bubo scandiacus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Surf Scoter Melanitta perspicillata This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Whimbrel Numenius phaeopus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9483	Breeds elsewhere
White-winged Scoter Melanitta fusca This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be

used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

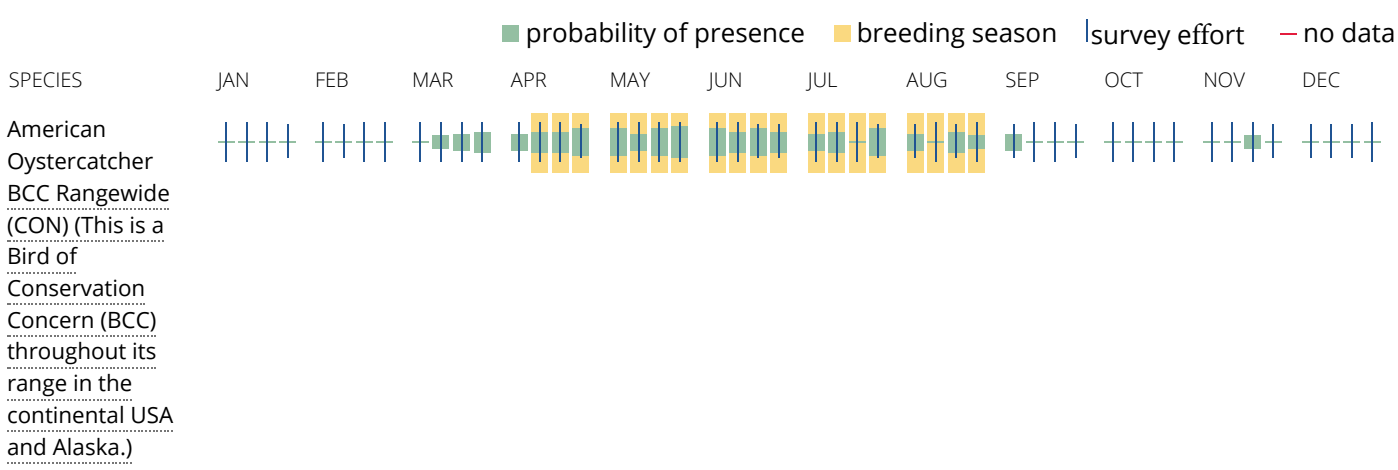
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

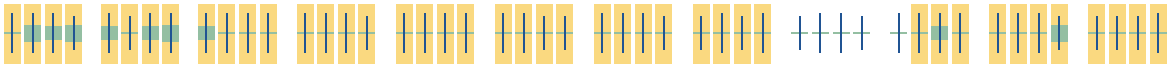
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

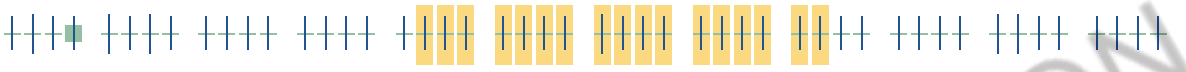
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas= from certain types= of development or= activities.)

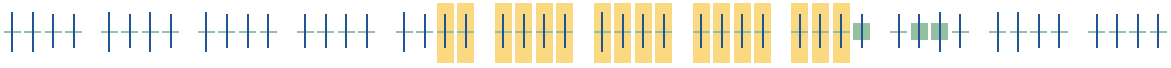


Black Guillemot
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas= from certain types= of development or= activities.)

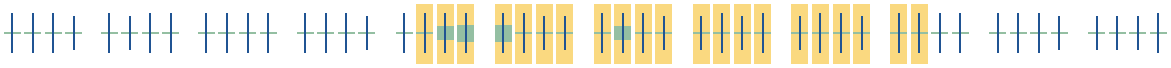


Black Scoter
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas= from certain types= of development or= activities.)

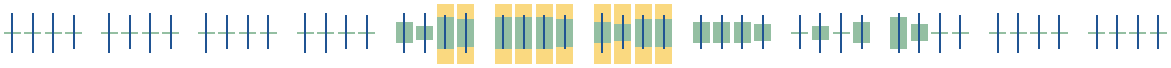
Black Skimmer
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Black-billed Cuckoo BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



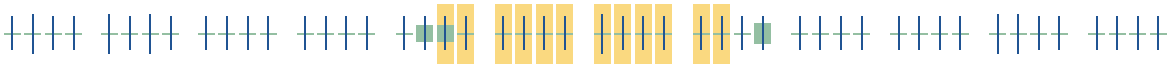
Bobolink BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



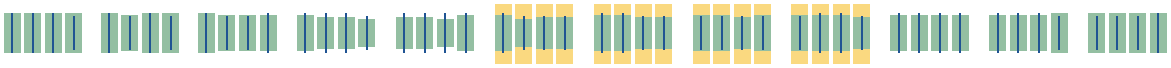
Bonaparte's Gull Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Buff-breasted Sandpiper BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

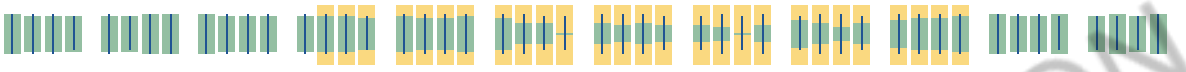
Canada Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Common Eider
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas= from certain types= of development or= activities.)

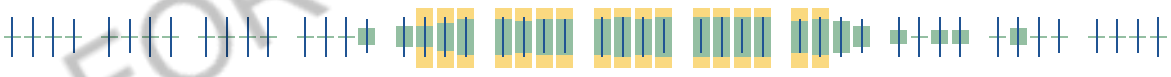


Common Loon
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas= from certain types= of development or= activities.)



SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Common Tern
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas= from certain types= of development or= activities.)



Double-crested Cormorant Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas= from certain types= of development or= activities.)

Dovekie Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas= from certain types= of development or= activities.)

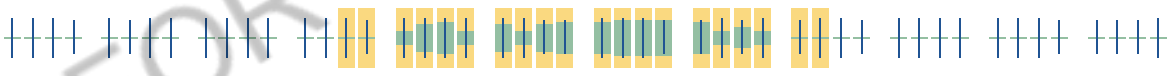
Dunlin BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Evening Grosbeak BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

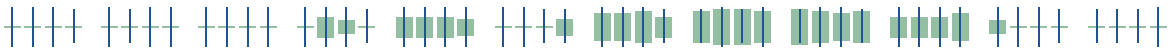
Great Black-backed Gull Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Herring Gull Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Least Tern BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



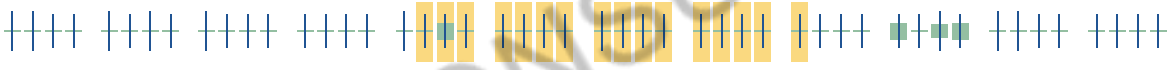
Lesser Yellowlegs BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Long-eared Owl BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Long-tailed Duck Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Nelson's Sparrow BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



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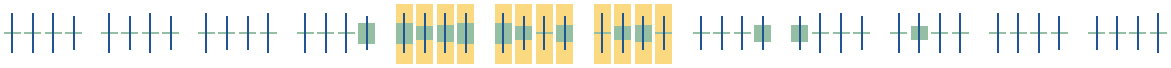
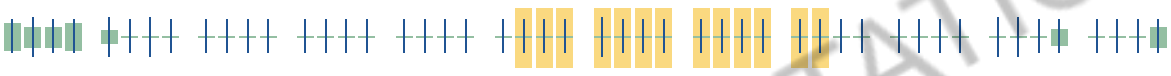
Northern Gannet Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Prairie Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

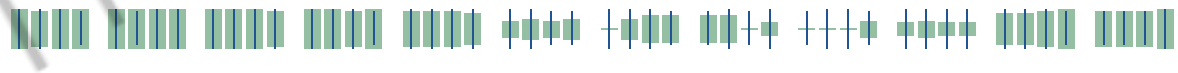


Purple Sandpiper BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Razorbill Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



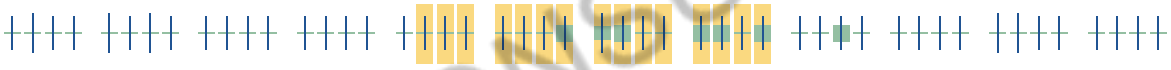
Red-breasted Merganser Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



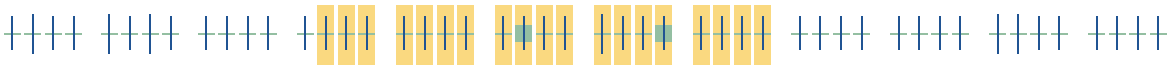
Red-throated Loon BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

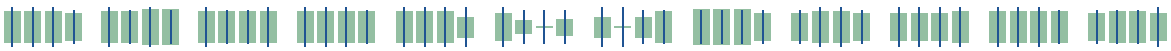
Ring-billed Gull Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Roseate Tern Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



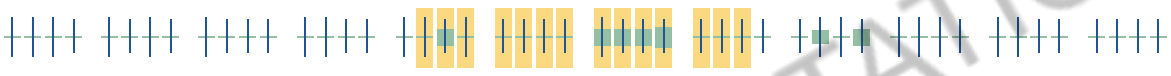
Royal Tern Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)





Ruddy Turnstone BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Rusty Blackbird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Seaside Sparrow BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

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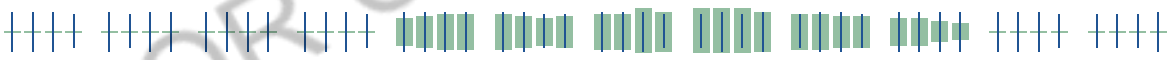
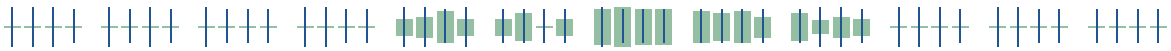


Semipalmated Sandpiper BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Short-billed Dowitcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

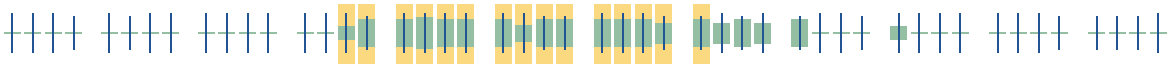
Snowy Owl BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Surf Scoter Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

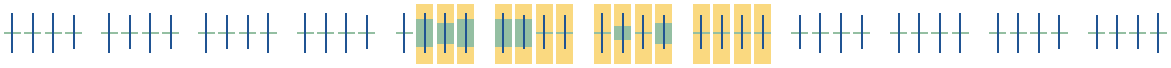
Whimbrel BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

White-winged Scoter Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Willet BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Wood Thrush BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting

point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

This location overlaps the following National Wildlife Refuge lands:

LAND	ACRES
SACHUEST POINT NATIONAL WILDLIFE REFUGE	243.64 acres

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

ESTUARINE AND MARINE DEEPWATER

- M1UBL
- E1UBL
- E1UBLx

- E1ABL
- E1UB4L

ESTUARINE AND MARINE WETLAND

- E2US2P
- E2US2N
- E2EM1P
- E2US2M
- E2EM1/5P6
- E2US1N
- E2US1P
- M2US2P
- E2RS1P
- E2US2Ns
- E2EM1N
- E2US2/1P
- E2EM1Pd
- E2RS1N
- E2USP
- E2RS2N
- M2RS2N
- E2EM5P
- E2US3M
- M2RS1P
- E2EM1/SS1P
- E2US4M
- E2SS1P
- E2RS2P
- E2USN
- E2EM1Ph

FRESHWATER EMERGENT WETLAND

- PEM1/5E
- PEM1E

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1C
- PFO1E

FRESHWATER POND

- PUBHh
- PUBHx
- PUBV

RIVERINE

- R2UBH
- R4SBC
- R3UBH
- R5UBH
- R1UBV

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.