Section 2—Project Siting

This section presents a description of the siting and route selection process for the SFWF and SFEC as conducted by DWSF. Section 2.1 presents the siting history leading to the proposed location of the SFWF. Section 2.2 provides a summary of the steps taken to identify and evaluate the potential offshore and onshore SFEC routes. Section 2.3 presents a description of the construction methods, equipment, and installation technologies DWSF has reviewed and considered for the SFWF and SFEC.

2.1 South Fork Wind Farm Siting History

In 2013, BOEM divided and auctioned the RI-MA WEA as two lease areas (North Lease OCS-A 0486 and South Lease OCS-A 0487). It opened competitive bidding and eventually awarded both leases to Deepwater Wind New England, LLC. The North Lease Area consisted of 97,498 acres and the South Lease Area consists of approximately 67,250 acres (Figure 2.1-1). In January 2020, Deepwater Wind New England, LLC requested that BOEM assign a portion of Lease Area OCS-A 0486 to DWSF to be given the designation OCS-A 0517. Lease OCS-A 0517 and the SFWF MWA are both located within a portion of the North Lease Area. This section provides the history of the siting and screening of the RI-MA WEA, and how the SFWF was located.

2.1.1 Siting and Screening of the Deepwater Wind Lease Areas

The location of the RI-MA WEA was the result of a multi-year effort by state and federal regulatory agencies to identify OCS areas suitable for offshore renewable energy development. The area was identified based on 4 years of preliminary site characterization, environmental assessment, and stakeholder discussions occurring primarily during the development of the Rhode Island Ocean Special Area Management Plan (OSAMP). Significant investment of public resources went into the compilation and review of site characterization data and the assessment of potential environmental impacts. A wide range of impacts were examined including environmental, economic, cultural and visual resources, and use conflicts.

Several planning efforts organized by federal and state entities involving private and public interest groups, as well as members of the academic community and the public, led to the identification of the areas that were eventually leased. The primary efforts and process milestones were as follows:

- BOEM's 2009 Intergovernmental Renewable Energy Task Forces in Massachusetts and Rhode Island
- Massachusetts Ocean Management Plan, 2015 (update of 2009 version)
- *Rhode Island Ocean Special Area Management Plan*, 2010, assessed environmental, economic, cultural and visual resource data, and use conflicts of the entire OSAMP region, creating a baseline of information that was considered during the designation of the RI-MA WEA (RI CRMC, 2015).
- Executive Order (EO) 13547 of July 19, 2010, which was signed on July 19, 2010, established the National Ocean Policy and provided a national framework and governance structure for sustainable management of U.S. ocean, coastal, and Great Lakes resources. This EO began a multi-year process which resulted in the Northeast Regional Ocean Plan (The White House, 2010).

- Memorandum of Understanding signed by the Governors of Rhode Island and Massachusetts in 2010, forming a partnership to collaborate with BOEM and defining an Area of Mutual Interest (AMI) for wind energy project development (Figure 2.1-2). The AMI was a contiguous block of 45 OCS lease blocks (256,199 acres or 1,035 square kilometers [km^2] or 302 square nm) (BOEM et al., 2010)
- In 2011, BOEM published in the *Federal Register* a Commercial Leasing for Wind Power on the Outer Continental Shelf Offshore Rhode Island and Massachusetts-Call for Information and Nominations (Docket No. BOEM-2011-0049, 76 *Federal Register* 51383-51391), requesting expressions of interest from potential wind project developers (BOEM, 2011a).
- In compliance with its obligations under NEPA, BOEM published in the *Federal Register* a *Notice of Intent to Prepare an Environmental Assessment* (Docket No. BOEM-2011-0063, 76 Federal Register 51391-51393) in 2011 (BOEM, 2011b).
- On July 2, 2012, BOEM published a Notice of Availability for the Commercial Wind Lease Issuance and Site Assessment Activities on the Atlantic Outer Continental Shelf Offshore Rhode Island and Massachusetts Environmental Assessment (77 *Federal Register* 39508). A 30-day comment period was opened, and BOEM held public informational meetings in Massachusetts and Rhode Island (BOEM, 2012).
- BOEM revised the 2012 environmental assessment for the RI-MA WEA in May 2013 to address issues raised by stakeholders and agency consultation about lease issuances and site assessment activities. BOEM issued a Finding of No Significant Impact for these activities within the RI-MA WEA (BOEM, 2013a).

BOEM reduced the original area considered for leasing based on environmental constraints, efforts to decrease user group conflicts, navigational safety, public health and safety, and stakeholder concerns (e.g., commercial fishing) (Figure 2.1-2). Much of the information assessed during the OSAMP supported the BOEM siting process. The result was the RI-MA WEA and eventually the North and South Lease Areas. The key considerations used to refine the RI-MA WEA included:

- The Governors of Massachusetts and Rhode Island agreement to a boundary that was at least 6 nm (16.7 km or 10.4 miles) away from any coastal area of either state.
- A lengthy stakeholder and scientific review process that identified "high value" fishing grounds and excluded those areas from the RI-MA WEA (Figure 2.1-2, exclusion zone). High value fishing includes the overlap between fixed gear fisheries (traps, pots, and gillnets) and mobile fisheries (trawls, dredges). Areas excluded from the RI-MA WEA had three to four types of fishing pressure from participating fisheries such as bottom trawling, scallop dredging, and lobster trap fisheries.
- Removal of certain aliquots to avoid marine traffic, navigation zones, and an area of unexploded ordinance.

The RI-MA WEA was designated for offshore renewable energy development as the result of a coordinated, rigorous, and thorough siting and screening process consistent with the objectives of the National Ocean Policy and NEPA.

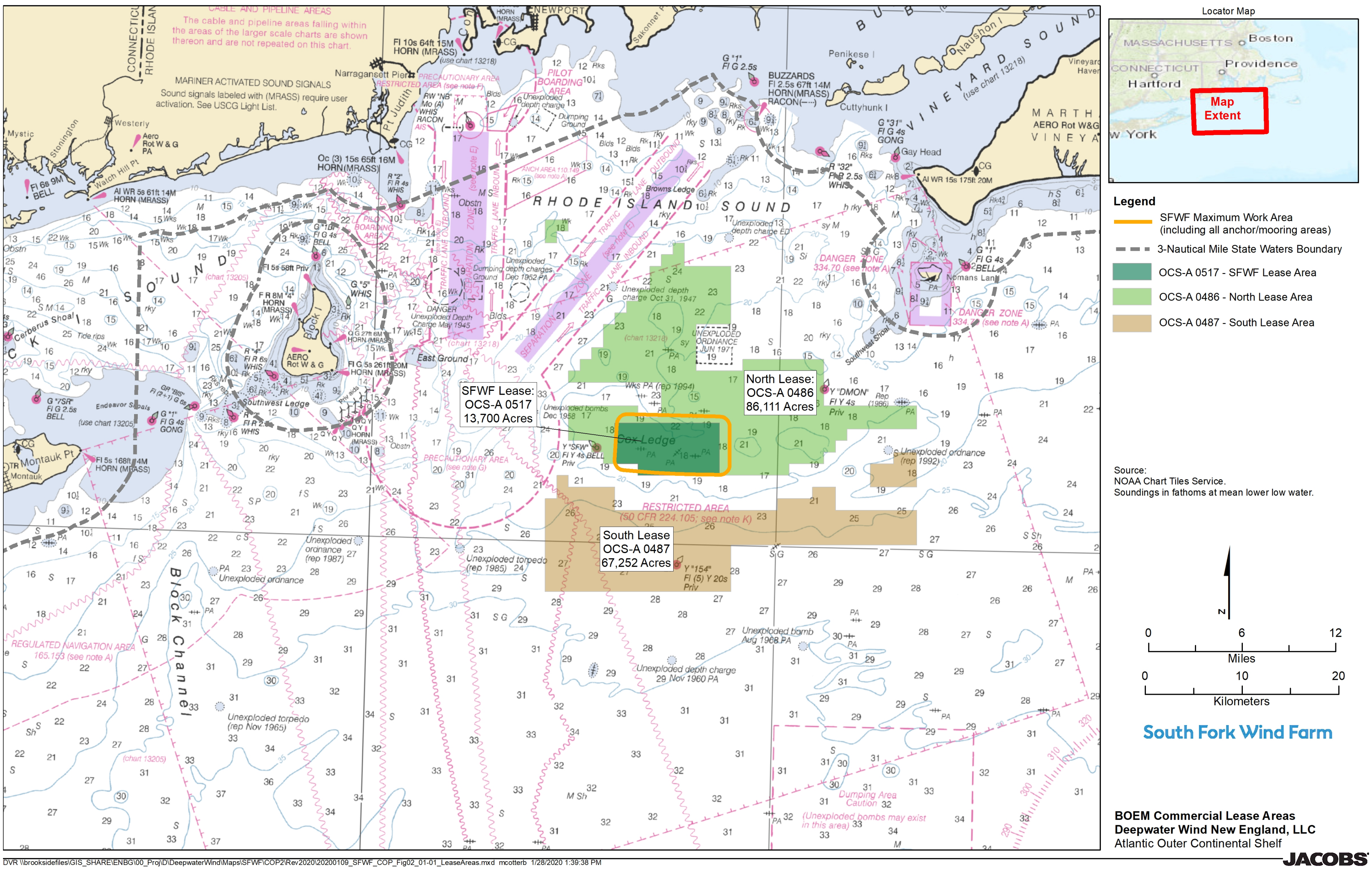

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Figure 2.1-1. Deepwater Wind New England, LLC Commercial Lease Areas

Illustration of the lease areas held by Deepwater Wind New England, LLC.

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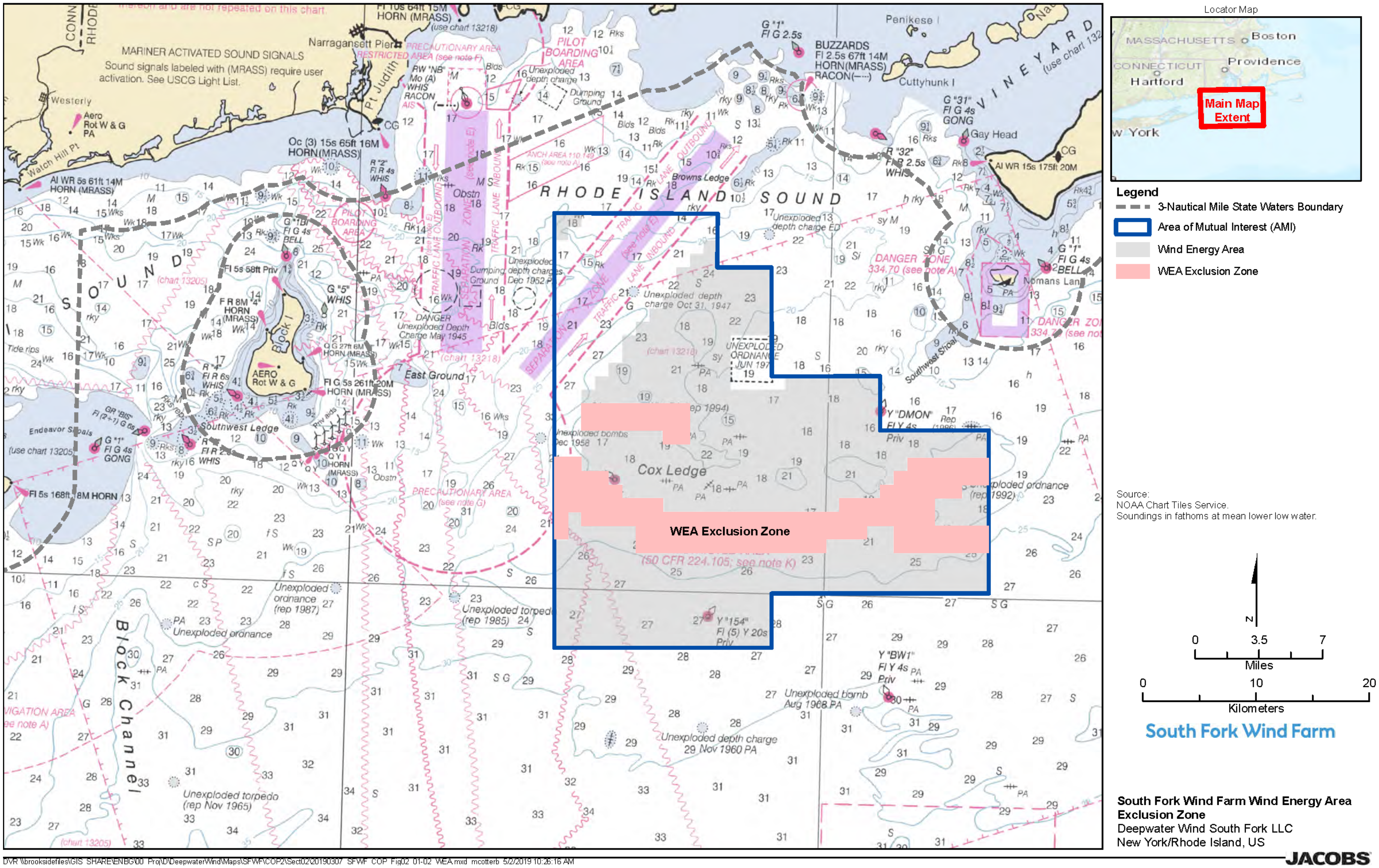

Figure 2.1-2. Rhode Island-Massachusetts Wind Energy Area Siting History

Map depicting the area of mutual interest, current Rhode Island-Massachusetts wind energy area and areas excluded from the wind energy area.

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2.1.2 South Fork Wind Farm Siting and Location

As described in Section 1, the Project purpose is driven by DWSF's PPA with the LIPA, which requires that power from the SFWF be delivered to the LIPA substation in East Hampton, New York. The southwestern corner of the North Lease Area was selected as the preliminary investigation area for the SFWF due to its proximity to Long Island (Figure 2.1-3, top panel). This portion of the North Lease Area minimizes the length of the interconnection to LIPA's system.

DWSF conducted comprehensive desktop studies of oceanographic, geologic, shallow hazards, archeological, and environmental resources in the North Lease Area. These desktop studies informed the Project COP survey plan, which was submitted to BOEM in 2017. The area proposed for survey in the 2017 COP survey plan is shown on Figure 2.1-3, middle panel. In 2018, a second COP survey plan was submitted for additional surveys. The purpose of both the 2017 and 2018 COP surveys was to conduct site characterization, marine archeological, and benthic studies necessary to further evaluate the seabed in the southwestern corner of the North Lease Area and along potential export cable routes. The 2017 and 2018 COP survey plans were submitted in accordance with the stipulations of the North Lease, as well as BOEM regulations and BOEM's guidelines:

- *Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to CFR Title 30, Part 585* dated July 2, 2015 (BOEM, 2015a)
- *Guidelines for Submission of Spatial Data for Atlantic Offshore Renewable Energy Development Site Characterization Survey* dated February 1, 2013 (BOEM, 2013b)
- *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* dated July 2015 (BOEM, 2015b)
- *Guidelines for Providing Benthic Habitat Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf* dated November 2013 (BOEM, 2013c)
- *Guidelines for Information Requirements for a Renewable Energy COP* dated October 22, 2014 (Version 2.0) (BOEM, 2014)

On June 22, 2017, BOEM notified DWSF that the 2017 COP Survey Plan was compliant and survey activities were initiated. DWSF conducted the 2017 COP survey between June and December 2017 in accordance with the approved COP Survey Plan. On October 19, 2018, BOEM notified DWSF that the 2018 COP Survey Plan was compliant and survey activities were conducted between October 2018 and January 2019 in accordance with the approved COP Survey Plan.

During the execution of the 2017 geophysical survey, the detection of potentially challenging seabed conditions led to the decision to shift the SFWF area eastward. Multi-beam survey data identified the presence of dense cobble, rock, and boulders on the seabed in the western-most region of the originally proposed SFWF survey area (Figure 2.1-3, middle panel). In contrast, areas just to the east were observed to have sparser rock and boulders with larger expanses of sand and mud on the seabed. Based on these findings, DWSF shifted the SFWF area and consequently the SFEC-OCS to the east shown on Figure 2.1-3 (bottom panel, dotted line, original MWA). Since the conclusion of the 2017 COP surveys, in response to feedback from federal and state agencies, and both commercial and recreational fishing, DWSF identified an additional wider spaced layout and expanded the MWA for the SFWF further to the east, as shown on Figure 2.1-3 (bottom panel, solid line, current MWA).

Positioning and siting of the foundations, as well as the Inter-array Cable, is constrained and complicated by the heterogeneous composition of the seabed (e.g., boulders) in the MWA. The current MWA is inclusive of all layout scenarios that have been considered by DWSF.[3]

DWSF evaluated various layout scenarios with WTGs oriented in east to west rows,

DWSF has committed to an indicative layout scenario with WTG sited in a grid with approximately 1.15 mile (1.8 km, 1 nm) by 1.15 mile (1.8 km, 1 nm) spacing that aligns with other proposed adjacent offshore wind projects in the RI-MA WEA.

[3] The SFWF COP submitted in September 2018 included a layout with WTG spacing of 1.0 mile (1.6 km, 0.86 nm). This layout was refined based on results of 2018 COP surveys and feedback from stakeholders and is presented in Section 3.1. The SFWF COP updated in May 2019 included two layout scenarios, including a layout with east to west corridors that were approximately 1.15 mile (1.8 km, 1 nm) between turbine rows, and a layout with east to west corridors that were approximately 0.8 mile (1.3 km, 0.70 nm). Both layouts maintained north to south corridors with an average spacing of 0.8 mile (1.3 km, 0.70 nm), and a minimum of 0.7 mile (1.1 km, 0.6 nm).

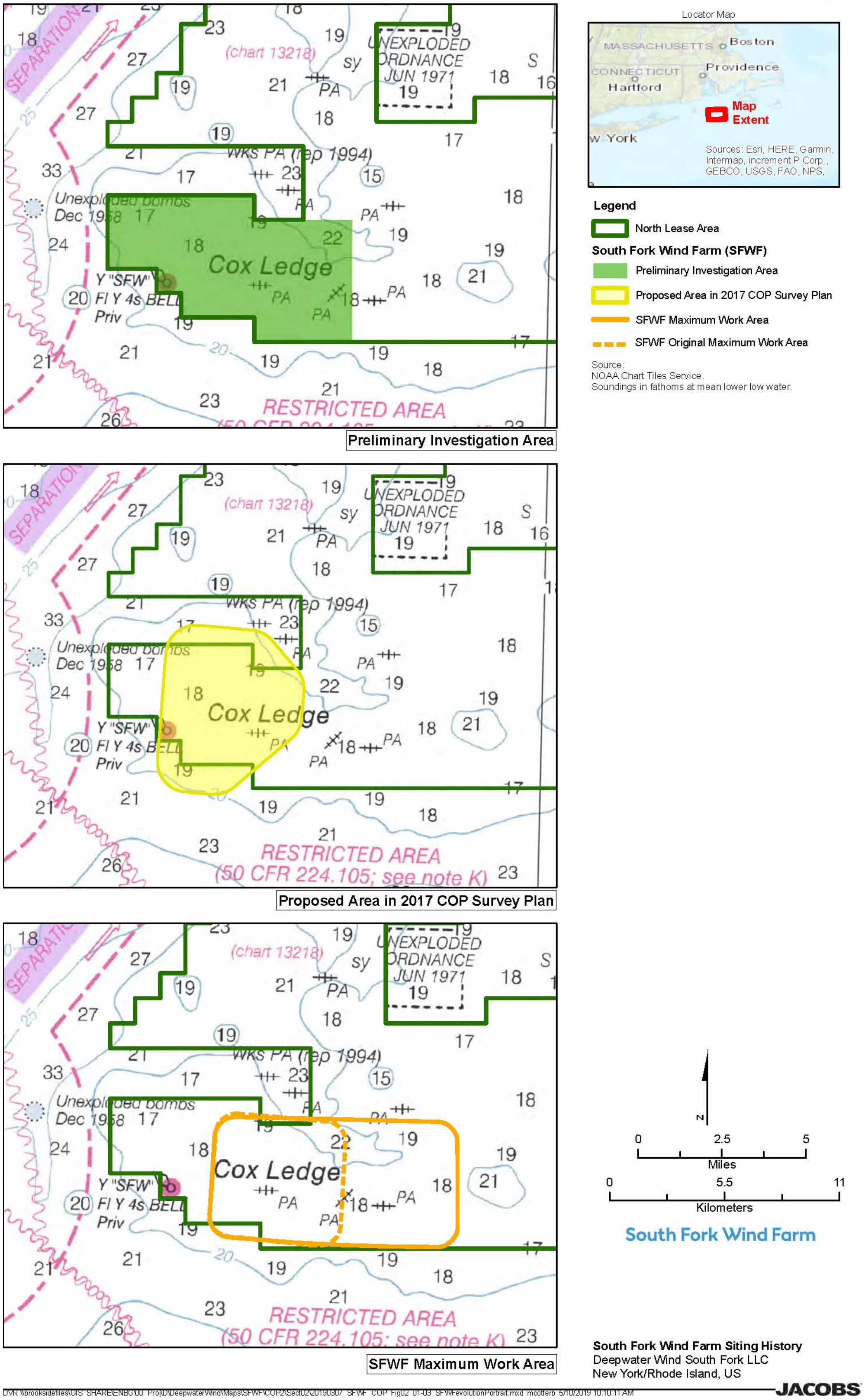

Figure 2.1-3. South Fork Wind Farm Siting History

Graphical illustration of the evolution of siting the South Fork Wind Farm based on site evaluations.

2.2 South Fork Export Cable Siting History

DWSF identified several potential offshore and onshore cable routes for the SFEC based on both desktop analysis and field assessment activities, all of which supported the Project purpose.

Pursuant to 30 CFR § 585.200(b), DWSF has the right to one or more project easements for the purpose of installing cables on the OCS to support activities within the lease. As part of the approval of this COP, DWSF requests that BOEM issue a Project easement for the portions of the SFEC located in federal waters. In New York State, review of a preferred and alternative cable routes, via analysis of a wide variety of siting factors, occurs under Article VII of the New York State PSL. This section provides a synopsis of the routing assessment completed to identify both the offshore and onshore routes for the SFEC.

2.2.1 South Fork Export Cable - Offshore Route Siting

DWSF completed a desktop evaluation for the SFEC route corridors based on publicly available information on oceanographic, geologic, shallow hazards, archeological, and environmental resources. Bottom conditions, bathymetry, as well as environmental constraints were mapped and investigated. Both the northern and the southern route options were included in the 2017 COP survey plan (Figure 2.2-1).

DWSF initially identified one potential offshore corridor to reach the eastern end of Long Island. This corridor ran southwest from the SFWF, passing north of Montauk Point and into Napeague Bay on the north shore of the South Fork in the town of Easthampton, New York (Northern Route) (Figure 2.2-1). DWSF met with local, state, and federal agencies, tribes, and stakeholders (commercial and recreational fishing, environmental non-governmental organizations) to discuss the locations of the SFEC route. Stakeholders identified concerns with the Northern Route into Napeague Bay. Both the commercial fishing community and the Town of East Hampton voiced strong concerns and requested that DWSF consider landing the SFEC at a location on the south shore of the South Fork. Therefore, DWSF added three potential landing sites on the south shore and developed an associated SFEC route (Southern Route) (Figure 2.2-1).

Initial geophysical field surveys during the 2017 COP survey were conducted for both the Northern and Southern Routes to obtain more detailed site-specific information. Based on the preliminary results of these surveys and through continued agency and stakeholder consultation, DWSF determined that the Northern Route would have limited viability due to engineering constraints and environmental considerations including commercial fisheries interests. Several engineering constraints were identified, such as significant portions of shallow water in Napeague and Gardiners Bays and areas near Endeavor Shoals east of Montauk Point where large dynamic sand waves exist. Environmental constraints were identified along the Northern Route including heavily utilized fishing grounds (e.g., fixed gear areas to the east and north of Montauk), nearby shellfish and eelgrass beds, and the presence of municipal aquaculture lease areas in Napeague Bay. Napeague Bay, as a more sheltered coastal embayment, has high ecological sensitivity and supports significant populations of finfish and shellfish.

The south shore of Long Island is an open ocean environment as compared to the lower energy Napeague Bay. The Southern Route presented fewer engineering and environmental constraints as compared to the Northern Route. There is commercial fishing activity along the Southern Route including fixed and mobile gear; however, there are no known aquaculture lease areas. The subtidal coastal habitat along the south shore is subjected to higher wave action and, thus, has coarser sandy deposits. The benthic community along the south shore will recover faster from any potential impacts caused by the Project as compared to Napeague Bay. Given these results and agency and stakeholder preference, DWSF selected the Southern Route as the preferred route.

Geophysical data along the Southern Route were collected as the 2017 COP survey continued. Data were collected over a 590-foot (180-meter [m])-wide corridor. The position of the route centerline was revised and micro-sited as data were collected and reviewed during the survey in an iterative fashion. Feedback from the fishing community during the siting process also helped refine the location of the route. The Southern Route corridor was adjusted to avoid or minimize possible impacts to heavily commercially fished areas, archeological resources such as shipwrecks, and hazard areas identified as having greater potential for unexploded ordinances. The resulting adjusted Southern Route corridor is pictured in Figure 2.2-1 as the blue-hashed line.

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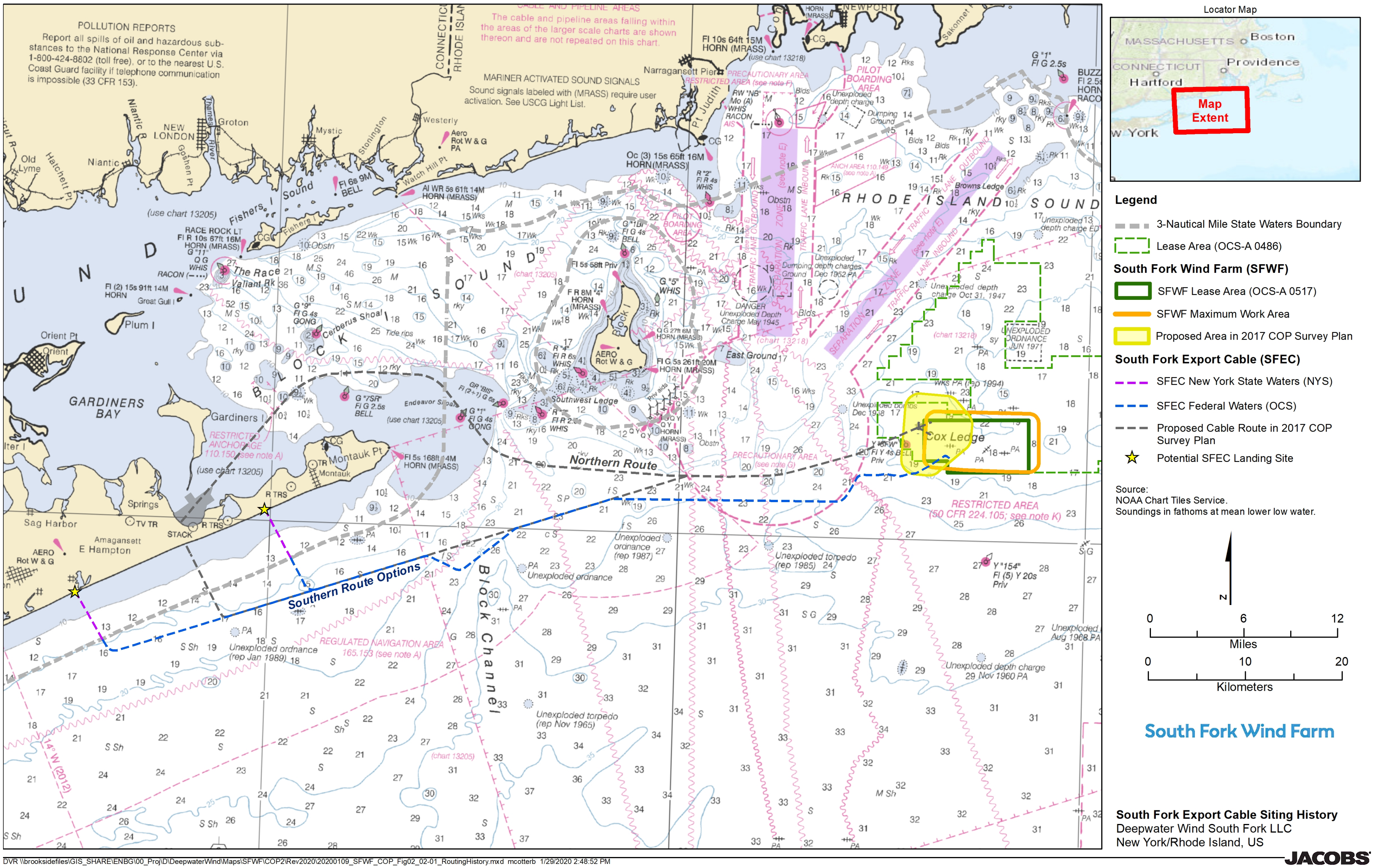

Figure 2.2-1. South Fork Export Cable Siting History

Northern and Southern South Fork export cable options considered during site assessment activities.

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2.2.2 South Fork Export Cable - Onshore Route Siting

As discussed in Section 1, a Certificate of Environmental Compatibility and Public Need under Article VII of the New York State Public Service Law is required. The segment of the SFEC from the point it enters New York State territorial waters at the 3-mile (4.8-km, 2.6-nm) state seawater boundary to the SFEC - Interconnection Facility will be subject to comprehensive routing, economic, and environmental evaluations set forth in the rules and regulations under Article VII.

A total of five landing sites were investigated in East Hampton, New York.

Two landing sites associated with the offshore Northern Route were identified on the north shore in East Hampton. Both landing sites, described as Fresh Pond and Promised Land, are located in Napeague Bay (Figure 2.2-2). Fresh Pond landing site is located on town of East Hampton-owned right-of-way (ROW), while Promised Land is located in New York State park land. These landing sites were deemed not viable by DWSF based on the offshore route siting process described in the previous section.

Three landing sites associated with the offshore Southern Route were investigated on the south shore in East Hampton (Figure 2.2-2):

- Beach Lane - The Beach Lane landing site is located at the south end of Beach Lane on town of East Hampton-owned ROW. The Beach Lane landing site is comprised of paved parking in its northern extent and the remainder of the ROW is beach.
- Hither Hills - The Hither Hills landing site is located within an upper parking lot of the eastern portion of state-owned Hither Hills State Park, south of Old Montauk Highway.
- Napeague Lane - The Napeague Lane landing site is located at the end of Napeague Lane on town of East Hampton-owned ROW, south of Marine Boulevard. The Napeague Lane landing site is comprised of approximately 20 marked parking spots and beach.

After engineering and environmental analysis as well as discussion with municipal and state agencies, the Beach Lane and Hither Hills landing sites were identified as the two viable landing sites for the SFEC. The topographic conditions at Beach Lane and Hither Hills were found to be suitable for horizontal directional drilling (HDD) operations and conduit installation. Based on this evaluation, DWSF originally identified several route variants or options from the Beach Lane and Hither Hills landing sites (Figure 2.2-3).

Routes associated with the Beach Lane landing site have the shortest distance to the existing East Hampton Substation; therefore, impacts of linear route construction are minimized. The Beach Lane route options utilize, to the extent possible, less traveled roadways and leverage the Long Island Railroad ROW. Of the Beach Lane route variants investigated, Beach Lane - Route A minimizes impacts to onshore traffic, heavily traveled roadways (e.g., Montauk Highway), and sensitive terrestrial habitats (e.g., wetlands). Therefore, Beach Lane - Route B, Beach Lane - Route C, and Beach Lane - Route D were removed from consideration as variants. These routes required obtaining property rights from additional entities such as the Village of East Hampton or private homeowners. In addition, of the four Beach Lane variants investigated, Beach Lane - Route C and Beach Lane - Route D did not minimize impacts to traffic or wetlands. Hither Hills - Route B primarily utilizes State-owned roadways and LIRR ROWs, whereas the Hither Hills - Route A and Hither Hills - Route C require obtaining property rights from additional entities, such as the Town and Village of East Hampton.

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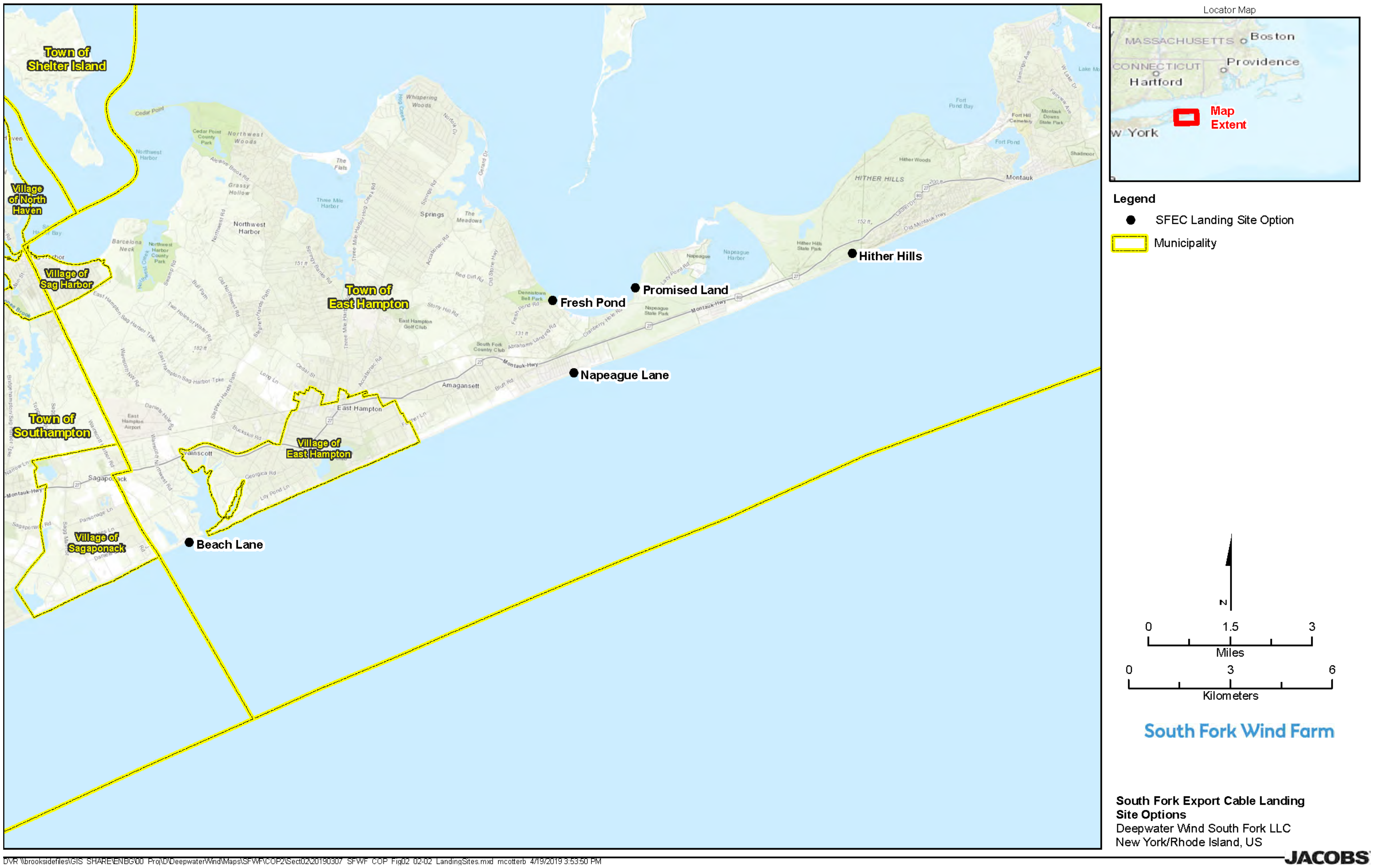

Figure 2.2-2. South Fork Export Cable Landing Site Options

Five landing site options considered for the South Fork Export Cable landing site on the South Fork of Long Island, New York.

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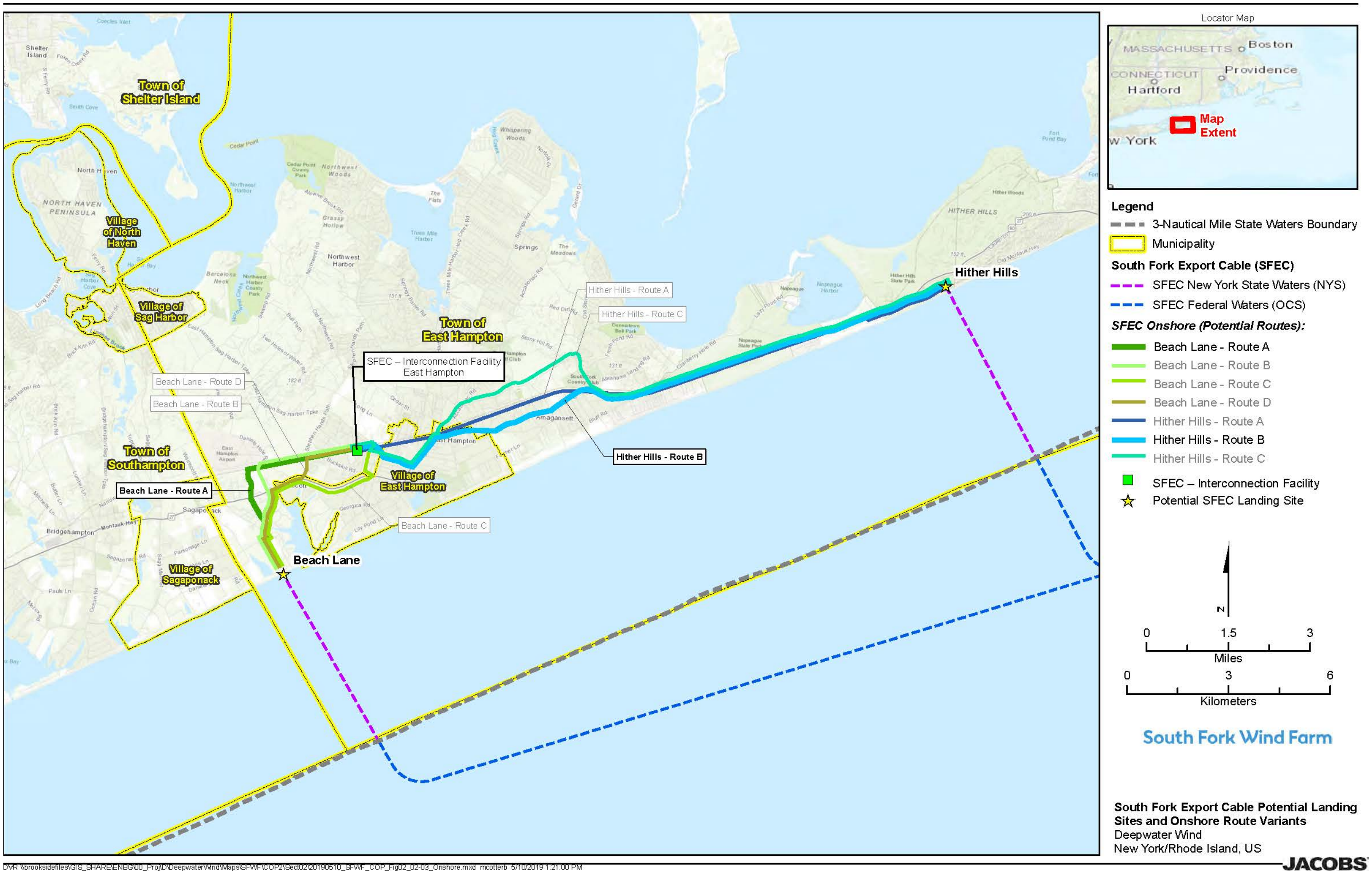

Figure 2.2-3. South Fork Export Cable Onshore Route Options

Seven onshore cable route variants considered to interconnect with the Long Island Power Authority transmission system at the East Hampton Substation.

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2.3 Review of Technologies and Installation Methods

DWSF considered several potential technologies and installation methods for the SFWF and SFEC. The feasible technologies and installation methods are described in detail in Section 3. Technologies and installation methods that are not considered viable are described in this section.

2.3.1 South Fork Wind Farm - Technologies and Methods

Turbines

DWSF considered multiple offshore turbine models based on various sizes of WTGs that are commercially available. DWSF evaluated WTG sizes based on environmental, technical, and financial suitability for the SFWF. Selection of a turbine model will define the total number of WTGs required to meet the power supply need identified by LIPA in the PPA. Smaller, lower-capacity turbine models would require installation of a greater number of WTGs compared to larger, higher-capacity turbine models. The use of fewer WTGs improves the cost effectiveness of the Project by streamlining installation and minimizing environmental and socio-economic impacts, particularly visual impacts and bottom disturbances. Due to economies of scale and lack of commercial availability, WTG models smaller than 6 MW are not considered feasible for the SFWF.

Foundations

DWSF evaluated several types of WTG foundations; however, monopiles are the preferred foundation type for the SFWF and is described in Section 3. Four foundation types, including suction bucket foundation, floating platforms, gravity-based structure (GBS) foundation, and jacket foundation, were initially evaluated and then removed from consideration. In general, monopiles are the preferred foundation for offshore wind because of significant advancements of this technology. As a result, a majority of the offshore wind supply chain is geared towards monopiles. The vast majority of turbine foundations in Europe and the rest of the world consists of monopiles. DWSF selected the monopile foundation type based on suitability for subsurface conditions and water depths at the SFWF (as described in the Site Characterization Report in Appendix H1).

Suction bucket foundations have been installed at a few offshore wind projects in Europe and are planned for one project within the United States (Icebreaker in Lake Erie). The majority of these foundations have been installed via mono-bucket due to shallow water depths (less than 66 feet [20 m]). In deeper waters, this foundation type has not been fully evaluated and is considered to be suitable only for specific soil types and subsurface conditions. As such, suction bucket foundations are not considered feasible for the SFWF.

Floating platforms are still in the prototype development stage and have not been deployed for commercial offshore wind projects. Floating platforms are generally considered appropriate for installations at much deeper water depths than are present at the SFWF. Floating platforms are not considered appropriate for the SFWF given the prototypical nature of the platform and because the water is not deep enough to justify the additional costs and engineering considerations. As such, floating platforms are not considered feasible for the SFWF.

GBS foundations have been installed at only a few offshore wind projects in Europe. These foundations include a large seabed footprint, installation of significant scour protection, and could require significant dredging. Port facilities where GBS foundations would be fabricated may require significant upgrades, including extensive load bearing reinforcements and establishing possible concrete batch plants requiring air emission permitting. The site assessment surveys for SFWF documented numerous surface boulders that limit the suitability for GBS foundations. As such, GBS foundations are not considered for the SFWF.

Jacket foundations have been installed at other offshore wind projects, including one project in the United States (Block Island Wind Farm in Rhode Island). Jacket foundations have limited commercial availability and require a custom-made jacket to match the seabed and water depth at the siting location. The logistics for construction and transportation can also be significant. As such, jacket foundations are not considered for the SFWF.

2.3.2 South Fork Export Cable - Technologies and Methods

DWSF evaluated different current types for the SFEC. The SFEC is designed to use high-voltage alternating current (HVAC), rather than high-voltage direct current (HVDC) transmission lines due to the considerably lower costs to connect HVAC into a primarily alternating current LIPA system. HVDC is a considerably larger investment than HVAC and is only cost-effective for wind farms with a larger nameplate capacity than planned for the SFWF or for long transmission lines carrying very large power capacities. The transmission distance and power rating of the SFEC makes it suitable for the more cost-effective HVAC system. Therefore, HVDC was not selected for the SFEC.

South Fork Export Cable - Offshore Installation Methods

DWSF considered various options for installation of the SFEC - Offshore, including placement on the seabed and burial beneath the seabed. Although placement on the seabed would minimize installation time and cost as well as potential sediment disturbance, DWSF plans to bury the cable beneath the seabed. Burying the cable is a means of protecting it from potential damage caused by various external forces (e.g., fishing equipment, anchors). Burying the cable also minimizes the need for maintenance and associated potential for seabed disturbance. The smallest available cable with the appropriate conductor size has been selected. The burial depth has been selected to balance two design criteria: 1) a burial depth deep enough to avoid physical damage from anchors, vessels, or other equipment that might penetrate the seabed; and 2) a burial depth shallow enough to allow heat to flow away from the cable fast enough so that the temperature does not exceed the design basis of the cable. The Site Characterization Report (Appendix H1) includes additional information about the cable burial assessment.

DWSF also considered various installation methods for the SFEC - Offshore, including hydraulic plow, mechanical plow, and mechanical dredging. Due to the variability of surface and subsurface seabed conditions, DWSF may use a combination of cable installation equipment (e.g., mechanical cutter, mechanical plow, jet plow) to install the cable at the target burial depth.

Mechanical dredging is not considered a feasible installation method because it requires mobilization of a dredge operation for an extended period of time due to the considerable route length and water depths. Mechanical dredging results in both a significant seabed footprint, suspended sediments, and greater potential impacts to marine navigation.

DWSF considered multiple installation methods for the sea-to-shore transition at the cable landing site. Jet plowing (i.e., trenching via high pressure seawater) could be used to bury the cable in the nearshore zone up to the mean high-water line (MHWL) on the beach. In this scenario, either an open trench or an HDD (likely with a cofferdam on the beach) would be used to install the cable from the MHWL to the transition vault located at an onshore location. These methods are not considered feasible based on impacts to intertidal, beach, and dune habitats during construction.

Instead, DWSF plants to conduct a longer HDD from the transition vault onshore, boring deep under the dunes and beach, and terminating offshore in deeper water (well past the MHWL). DWSF recognizes the importance of preserving the coastal habitats along the south shore of Long Island. This method avoids impacts to intertidal, beach, and coastal habitats and maintains safety for beachgoers.

South Fork Export Cable - Onshore Installation Methods

DWSF considered various options for installation of the SFEC - Onshore, including use of aboveground structures and burying the cable. Although aboveground installation would minimize construction time and cost, a buried cable increases safety and reliability, particularly during adverse weather conditions, and reduces noise, interference with communications, and visual impact. Therefore, DWSF plans to bury the cable within existing ROWs.

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Section 3—Project Description

This section provides a description of the Project components for the SFWF and SFEC. Activities associated with construction and installation, commissioning, O&M, and conceptual decommissioning are also discussed in this section.

- **SFWF:** includes up to 15 WTGs with a nameplate capacity of 6 to 12 MW per turbine, submarine cables between the WTGs (Inter-array Cables), and an OSS, all of which will be located within federal waters on the OCS, specifically in BOEM Renewable Energy Lease Area OCS-A 0517, approximately 19 miles (30.6 km, 16.6 nm) southeast of Block Island, Rhode Island, and 35 miles (56.3 km, 30.4 nm) east of Montauk Point, New York.
- **SFEC:** an AC electric cable (138 kV) that will connect the SFWF to the existing mainland electric grid. The SFEC includes the following:
  - **SFEC - OCS:** the submarine segment of the export cable within federal waters on the OCS from the OSS to the boundary of New York State territorial waters.
  - **SFEC - NYS:** the submarine segment of the export cable from the boundary of New York State waters to a sea-to-shore transition vault located in the Town of East Hampton on Long Island, Suffolk County, New York.
  - **SFEC - Onshore**: the terrestrial underground segment of the export cable from the sea-to-shore transition vault to the interconnection facility where the SFEC will interconnect with the LIPA electric transmission and distribution system in the town of East Hampton on Long Island, Suffolk County, New York.
- **SFWF O&M facility:** DWSF expects that the SFWF O&M facility will be located on an existing waterfront parcel at either Montauk in the Town of East Hampton, New York, or in Quonset Point in the Town of North Kingstown, Rhode Island.

Port facilities in New York, Rhode Island, Massachusetts, Connecticut, New Jersey, Maryland, and/or Virginia will support offshore installation activities for the SFWF and SFEC - Offshore, and construction activity for the SFEC - Onshore will occur in East Hampton, New York.

Figure 1.1-1 (Section 1) depicts the operational concept of the Project and Figure 1.1-2 (Section 1) provides an overview map of the location of the various Project components.

Appendix F includes supplemental information on Project location and activities that occur during construction, O&M, and decommissioning. Appendix F includes a location plat, including a table that lists surface locations and water depths for Project components. Appendix F also presents a tabular summary of the information identified in Attachment B of BOEM's *Guidelines for Information Requirements for a Renewable Energy Construction and Operations Plan (COP)* (BOEM, 2016). In addition, Appendix F includes information, pursuant to 30 CFR 585.626(b)(9) and (10), including a sample inventory of materials consistent with the expected methods for installation and an inventory of anticipated chemical use and management. Finally, Appendix F includes information on locations where the SFEC will cross existing telecommunications cables, including copies of DWSF correspondence with owners of those cables.

Appendix G includes conceptual plans and drawings for both the SFWF and SFEC, as referenced throughout Section 3. Appendix G also includes figures showing the corridor for the SFEC - Offshore, in both plan and profile format, as well as the corridor for the SFEC - Onshore.

The SFWF and SFEC are being developed based on an envelope approach, consistent with BOEM's Draft *Guidance Regarding the Use of a Project Design Envelope in a COP* (January 2018). This approach results in a range of characteristics and locations for components that will be considered in the environmental review for the Project. As such, the components and locations for the SFWF and SFEC have been selected based on environmental and engineering site characterization studies completed to date and will be refined and then finalized in the FDR and Fabrication and Installation Report (FIR), which also will be reviewed by BOEM pursuant to 30 CFR § 585.700-702, before installation begins. In addition, a CVA, approved by BOEM, will conduct an independent assessment of the engineering design described in the FDR. The CVA will also verify, based on monitoring and inspections conducted during construction, that the Project components are fabricated and installed in accordance with both the COP and FIR.

The Project Envelope for the SFWF and SFEC includes several general characteristics that vary by component (Table 3.0-1). These characteristics are further described in Sections 3.1 and 3.2.

Table 3.0-1. Project Components and Envelope
Project characteristics by component, and range of options within project envelope of that characteristic (if applicable).

Project Component		Project Envelope Characteristic
SFWF	Foundation	Monopile with pile diameter up to 11 m
	WTG	• Up to 15 WTGs (includes 15 positions, plus 2 alternate positions) • 6 to 12 MW each
	Inter-Array Cable	34.5 kV or 66 kV
	OSS	Mounted on a dedicated foundation or co-located with a WTG
	O&M Facility	Located in Montauk, New York, or Quonset Point, Rhode Island
SFEC	Export Cable (Offshore and Onshore)	• 138 kV • Offshore located within a surveyed corridor 590-feet (180-m) wide, target burial depth 4–6 feet (1.2–1.8 m) • Onshore duct bank located within existing paved road and railroad ROWs, target burial 8 feet (2.4 m)
	Sea-to-Shore Transition	• Landing site located at either Beach Lane or Hither Hills in East Hampton, New York • Installed using HDD between onshore underground cable transition vault and the offshore HDD exit location • HDD exit location may utilize offshore sheet pile cofferdam, gravity cell cofferdam, or no cofferdam
	Interconnection Facility	Newly constructed, air-insulated facility located adjacent to existing East Hampton substation

Installation of the SFWF and SFEC is scheduled to take place over a 2-year period. Construction will be completed in the following general sequence:

- Transportation of the foundations to the SFWF
- Installation of the foundations
- Installation of the OSS
- Installation of the cable systems
- Installation of the WTGs and OSS

3.1 South Fork Wind Farm

3.1.1 Project Location

The SFWF will be located in federal waters. The WTG closest to land will be approximately 19 miles (30.6 km, 16.5 nm) southeast of Block Island, Rhode Island, and approximately 35 miles (56.3 km, 30.4 nm) east of Montauk Point, New York (Figure 1.1-2). Water depths, in the area where WTGs are proposed to be installed, range from approximately 108 to 134 feet (33 to 41 m).

The SFWF will also include an O&M facility in either New York or Rhode Island, as well as offshore construction staging areas located at port facilities in New York, Rhode Island, Massachusetts, Connecticut, New Jersey, Maryland, and/or Virginia.

Site-specific investigations were conducted in 2017 and 2018 at the SFWF (described further in Section 4 and Appendix H). The survey data collected over both years encompassed the entire MWA. These surveys informed the positioning of the WTGs and Inter-array Cable (Figures 3.1-1).

DWSF has committed to an indicative layout scenario with WTG sited in a grid with approximately 1.15 mile (1.9km, 1.0 nm) by 1.15 mile (1.9 km, 1.0 nm) spacing that aligns with other proposed adjacent offshore wind projects in the RI-MA WEA.

The MWA shown on Figure 3.1-1 is the designated area where installation and supporting activities having seabed disturbance (e.g., anchoring) will occur. The MWA has an approximate buffer of at least 2,070 feet (631 m) around the outer edge of the WTG layout for increased work space. While the MWA includes limited areas outside the boundary of the Lease Area, all WTGs and foundations will be installed inside the Lease Area.

Positioning of foundations for WTG and OSS, as well as the Inter-array Cable is constrained and complicated by the heterogeneous composition of the seabed (e.g. boulders, hard bottom) and other potential constraints, including cultural and archeological resources in the MWA. Boulder density on the seabed is shown on Figure 3.1-1. Layout of the SFWF may be refined based on further consultation with agencies and stakeholders, ongoing offshore geophysical and geotechnical surveys, and detailed engineering and design. As such, DWSF requires flexibility to micro-site foundations. In accordance with 30 CFR § 585.634(c)(6), micro-siting of foundations will occur within a 500-feet (152-m) radius around locations identified in the indicative layout scenario.

Required engineering criteria considered for the final SFWF layout include:

- WTG size and number
- Seabed soil and sub-bottom characteristics must align with foundation design requirements
- Seabed surface characteristics must align with constructability requirements, including:
  - Areas clear of boulders where foundations can be installed, and installation vessels can anchor or jack-up
  - Areas accessible to cable lay operations, where Inter-array Cables can be installed to and from the foundation.

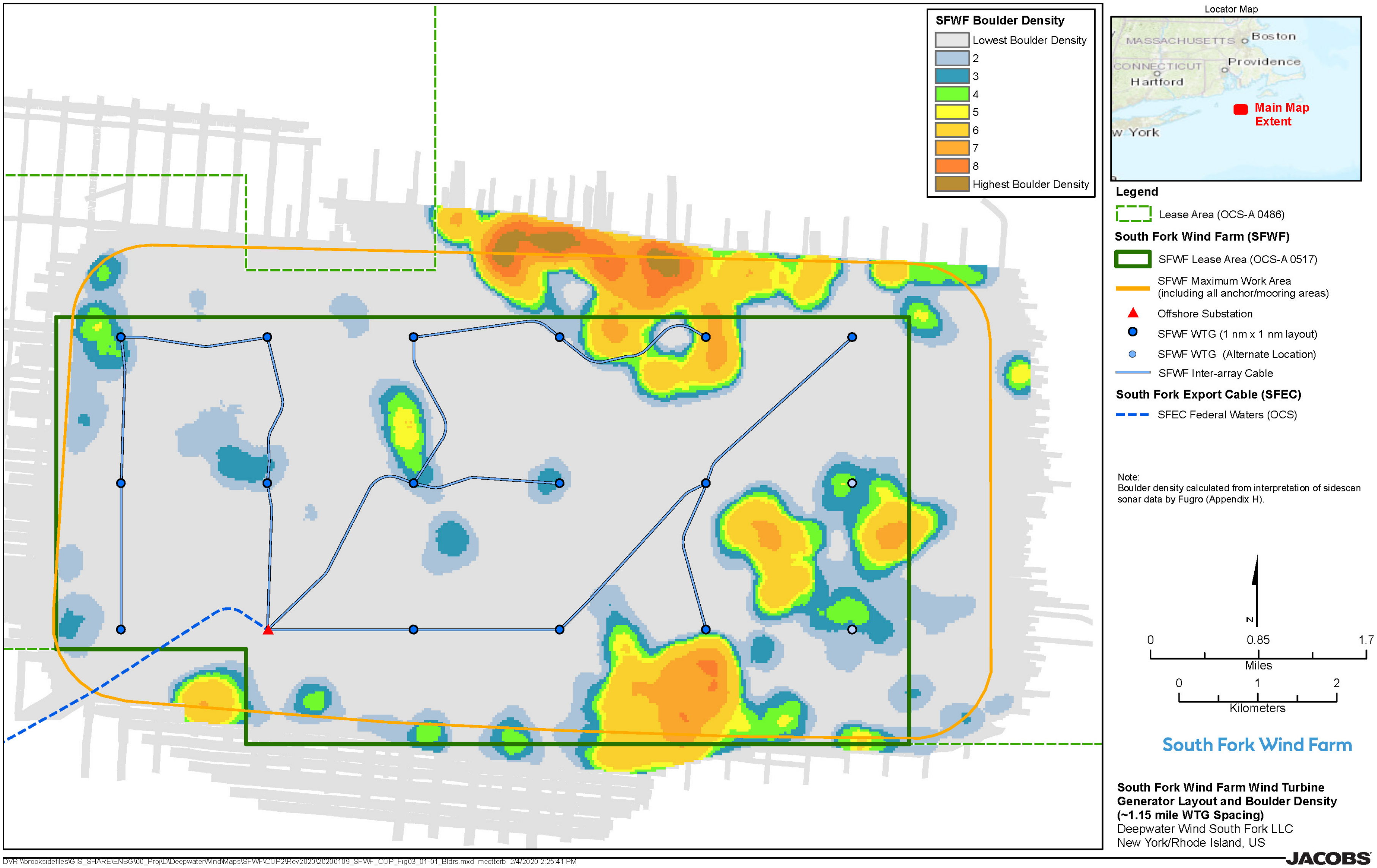

Figure 3.1-1. South Fork Wind Farm Wind Turbine Generator Layout and Boulder Density (~1.15 mile WTG Spacing)

Illustration of area where components will be located, where work will occur, and where boulder obstruction on the seabed exists.

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3.1.2 South Fork Wind Farm Facilities

The SFWF will consist of foundations, WTGs, Inter-array Cables, and an OSS, as well as the O&M facility located onshore. The major characteristics that may vary, including Project construction staging areas (i.e., ports), within the SFWF Project Envelope are listed in Table 3.0-1. The temporary and permanent footprints on the seabed for each SFWF component or activity are summarized in Table 3.1-1. Each of the SFWF components are described in the following sections. The tables included further describe parameters that may vary by each component. Where applicable, these estimates are presented with a range of minimum and maximum values.

Table 3.1-1. Footprint of South Fork Wind Farm Project Component or Activity
Maximum temporary and permanent seabed footprint for components of South Fork Wind Farm.

Project Component/Activity	Construction (Temporary)	Operation (Permanent)
Monopile Foundations [a]	14.8 acres (6 ha)	14.6 acres (5.9 ha)
Foundation cable protection [a]	N/A	7.5 acres (4.2 ha)
Vessel anchoring/mooring [c]	820.8 acres (332 ha)	N/A
Inter-array Cable [b]	340 acres (137.6 ha)	2.5 acres (1.0 ha)
Inter-array Cable protection [b]	N/A	10.2 acres (4.2 ha)

Notes:

[a] Conservatively assumes up to 16 foundations will be installed, including 15 foundations for WTGs and 1 foundation for the OSS. Permanent footprint also includes scour protection for 16 foundations and secondary cable protection for 16 foundations. Temporary disturbance includes seabed preparation.

[b] Conservatively assumes the Inter-array Cable has a maximum length of 21.4 miles (34.4 km, 18.6 nm) and a diameter of 12 inches (0.3 m). Permanent footprint also includes secondary cable protection. Temporary disturbance includes seabed preparation.

[c] Conservatively assumes that, during typical installation, three vessels will use anchors, three vessels will use spud cans, and all six vessels will visit each of the 16 foundations.

ha = hectare(s)

3.1.2.1 Foundations

Each WTG will be supported by one steel monopile foundation embedded into the sea floor (Figure 3.1-2 includes a conceptual diagram).

A monopile foundation typically consist of a single steel tubular section, comprised of several sections of rolled steel plate welded together. A transition piece is fitted over the top of the monopile and secured via bolts or grout. The transition piece may include boat landing features, ladders, a crane, and other ancillary components as well as an interface connection to the WTG. The transition piece will be painted yellow and marked according to USCG requirements. The transition piece will typically be installed separately following the monopile installation. It is also possible for the monopile and transition piece to be fabricated and installed as one component (a “one-piece monopile”), with the boat landing and other ancillary features installed subsequently as appropriate.

The SFWF Project Envelope includes a conservative range of design parameters (Table 3.1-2) and includes potential scour protection (see Section 3.1.3.2 for more details on scour protection). Typical figures are included in Appendix G and will be confirmed in the FDR.

Table 3.1-2. South Fork Wind Farm Parameters: Foundations
Summary of maximum parameters for monopile foundation.

Foundation Parameter	Maximum Footprint
Foundation base diameter (feet per foundation)	36 feet (11.0 m)
Maximum Permanent Footprint	
Seabed footprint per foundation with no scour protection (ft^2 [m^2] per foundation)	1,025 ft^2 (95 m^2)
Seabed footprint per foundation with scour protection (ft^2 [m^2] per foundation) [a]	39,765 ft^2 (3,694 m^2)
Total Maximum Permanent Footprint	635,976 ft^2 (59,084 m^2) 14.6 acres (5.9 ha)
Temporary Seabed Disturbance	
Seabed preparation per foundation (ft^2 [m^2] per foundation) [b]	40,365 ft^2 (3,750 m^2)
Vessel anchoring/mooring (ft^2 [m^2] per foundation) [c]	2,234,089 ft^2 (207,554 m^2)
Total Temporary Seabed Disturbance	36,391,264 ft^2 (3,380,859 m^2) 835.6 acres (338 ha)

Notes:

[a] Conservatively assumes scour protection is placed around the base of each foundation in a circle with a diameter of 225 feet (68 m).

[b] Conservatively assumes temporary seabed disturbance from boulder relocation may occur near each foundation. The total seabed disturbance for all 16 foundations will be up to 14.8 acres (6 ha); not all foundations will require boulder relocation.

[c] Conservatively assumes that temporary seabed disturbance from vessel anchoring/mooring will occur during typical foundation installation. The total seabed disturbance for all 16 foundations will be up to 820.8 acres (332 ha). Three vessels will use anchors and three vessels will use spud cans; all six vessels will visit each of the 16 foundations. The vessels with anchors will have a total maximum ground disturbance of 4.51 acres (1.8 ha) per foundation and this ground-disturbing activity will happen 11 times at 16 foundations. The vessels with spud cans will have a total maximum ground disturbance of 0.15 acre (0.06 ha) per foundation and this ground-disturbing activity will happen 11 times at 16 foundations. Table 3.1-7 includes additional details about the maximum ground disturbance for each of these vessels.

ft^2 = square feet

m^2 = square meters

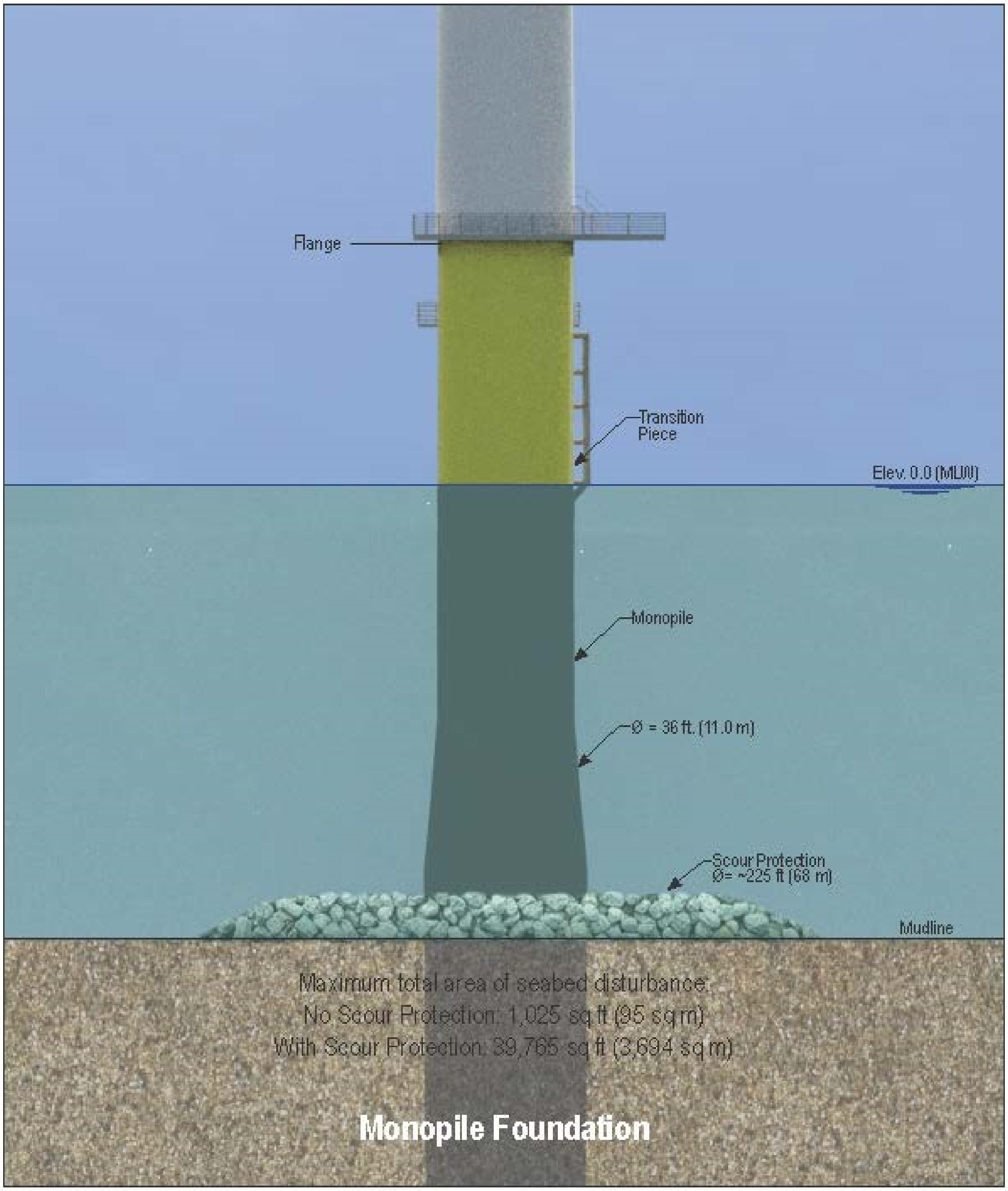

Figure 3.1-2. South Fork Wind Farm Monopile Foundation

Conceptual illustration of monopile foundation with transition piece, diameter (∅) of foundation base and scour protection rings shown.

3.1.2.2 Wind Turbine Generators

The SFWF will consist of up to 15 WTGs. DWSF will select the WTG model that is best suited for the Project and that is commercially available to support the Project schedule. The selected WTG model and nameplate capacity will ultimately determine the number of WTGs to be installed for the SFWF. Figure 3.1-4 depicts the project envelope area where the WTGs will be installed. The SFWF Project Envelope includes a conservative range of minimum and maximum parameters for the anticipated class of WTGs that could be used for the Project, which is expected to range from 6 to 12 MW (Figure 3.1-3, Table 3.1-3).

Table 3.1-3. South Fork Wind Farm Parameters: Turbines
Summary of parameters for the anticipated class of turbines.

WTG Parameter	Minimum Turbine Size (6 MW)	Maximum Turbine Size (12 MW)
Hub height (mean sea level [MSL])	331 feet (100.9 m)	472 feet (143.9 m)
Rotor diameter	492 feet (150 m)	735 feet (224 m)
Total height (top of the blade above MSL)	577 feet (175.9 m)	840 feet (256 m)
Rotor swept zone area	190,117 ft^2 (17,662 m^2)	424,173 ft^2 (39,406 m^2)
Air gap (bottom of the blade above MSL)	85 feet (25.9 m)	105 feet (32 m)
Blade length (feet)	246 feet (75 m)	358 feet (109.1 m)
Deck height above MSL	66 feet (20.1 m)	75 feet (22.9 m)

Each WTG will be comprised of the following major components: a tower, nacelle and rotor which includes the blades. Control, lighting, marking, and safety systems will be installed on each WTG; the specific systems will vary depending on the turbine selected, and will be reviewed by the CVA in the FDR. There will be small amounts of lubrication, grease, oil and cooling fluids within the WTG to support the operation of the WTG bearing, pitch, and hydraulic systems as well as the WTG transformer. In addition, there will be lubrication oil if the selected WTG has a gearbox. Heating, ventilation, and air conditioning, used for climate control, will be included within the WTG; the specific systems will vary depending on the WTG selected, and will be reviewed by the CVA in the FDR. There also may be a small, temporary diesel generator at each WTG location on the work deck of the foundation. If present, the generator would have a maximum power of 200 horsepower (hp) and up to a 50-gallon diesel tank with secondary containment. Each WTG will also have helicopter access by means of winching personnel onto/from a landing area.

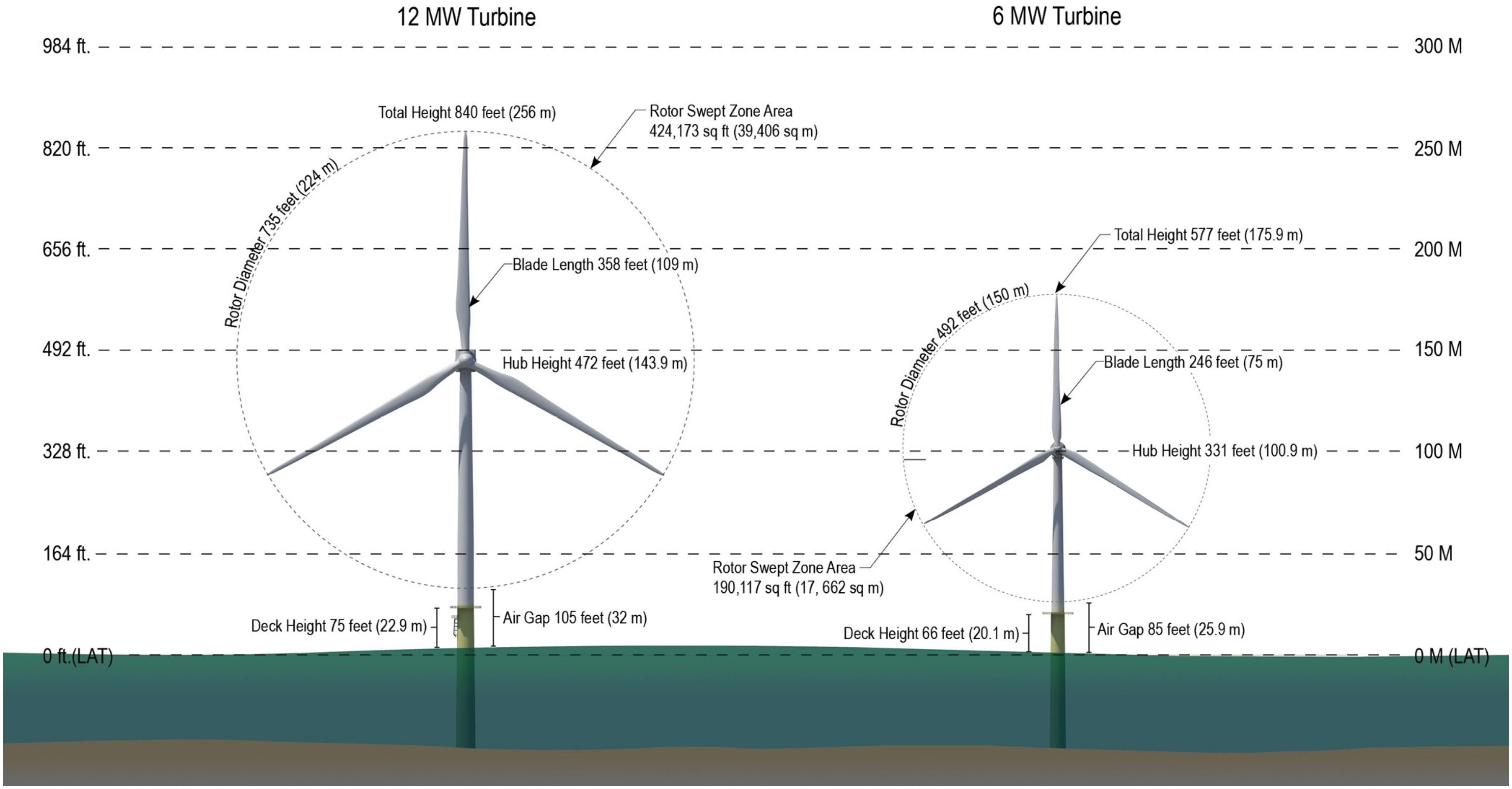

Figure 3.1-3. South Fork Wind Farm Wind Turbine Generator Illustration
Illustration of minimum and maximum range for wind turbine generator dimensions.
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3.1.2.3 Inter-Array Cable

Inter-array Cables will connect the individual WTGs and transfer power between the WTGs and the OSS. Figure 3.1-1 depict the approximate route where the Inter-array Cable will be installed between the WTG foundations. The SFWF Project Envelope includes a cable design that encompasses a conservative range of parameters (Table 3.1-4). The Inter-array Cable will either be a 34.5 kV or 66 kV 3-phase alternating current cable. Depending on the WTG selected, a 33-kV cable may be identified during the FDR. However, the physical characteristics of this 33-kV cable fall within the same range as the 34.5-kV cable described in Table 3.1-4. The final voltage of the Inter-array Cable will be determined based upon the finalized engineering design specifications for the SFWF, and will be reported in the FDR, which will be reviewed by the CVA.

The Inter-array Cable contains three conductors, screens, insulators, fillers, sheathing, and armor, as well as fiber optic cables; it does not contain lubricants, liquids, oils, or other insulating fluids.

The Inter-array Cable will have a target burial depth of 4 to 6 feet (1.2 to 1.8 m) in the seabed. Where the Inter-array Cable emerges from the trench and is attached to the foundation, cable protection (e.g., engineered concrete mattresses or rock) may be placed on the seabed near the WTG foundation.

In addition, it is anticipated that a maximum of 10 percent of the Inter-array Cable (2.0 miles [3.2 km, 1.8 nm]) may not achieve the target burial depth if hard substrate or other unforeseen obstacles are encountered. Secondary cable protection systems may be placed in those areas.

Appendix G includes a typical cross-section of the Inter-array Cable, a conceptual drawing of the typical burial depth for the cable, a conceptual drawing of concrete mattresses to be used near the foundation, and where burial depth cannot be achieved. The Site Characterization Report (Appendix H1) includes additional information about the cable burial assessment.

Table 3.1-4. South Fork Wind Farm Parameters: Inter-array Cable
Summary of parameters for the Inter-array Cable.

Inter-array Cable Parameter	Design Specifications
Cable diameter	6–12 inches (15.2–30.5 centimeters [cm])
Target burial depth [a]	4–6 feet (1.2–1.8 m)
Maximum trench depth	10 feet (3 m)
Cable length	21.4 miles (34.4 km, 18.6 nm)
Maximum Permanent Footprint	
Inter-array Cable [b]	2.5 acres (1.0 ha)
Secondary cable protection for Inter-array Cable [c]	10.2 acres (4.1 ha)
Cable protection at approach to foundations [d]	7.5 acres (4.2 ha)
Total maximum permanent footprint	20.2 acres (9.3 ha)
Temporary Seabed Disturbance (not including permanent footprint)	
Inter-array Cable installation[e]	85.0 acres (34.4 ha)
Boulder relocation[f]	255 acres (103.2 ha)
Total temporary disturbance	340 acres (137.6 ha)

Table 3.1-4. South Fork Wind Farm Parameters: Inter-array Cable
Summary of parameters for the Inter-array Cable.

Notes:

[a] Burial depth is measured from the seabed to the top of the cable.

[b] Conservatively assumes a length of 21.4 miles (34.4 km, 18.6 nm) and a diameter of 12 inches (0.3 m).

[c] Conservatively assumes secondary cable protection will be needed for up to 10 percent of the Inter-array Cable (2.1 miles [3.4 km, 1.9 nm]). Cable protection will consist of concrete matting, fronded mattresses, rock bags, or rock placement (8 feet long by 39 feet wide [2.4 m long by 12 m wide]).

[d] Conservatively assumes each cable approach to a foundation will require approximately 300 feet (91.4 m) of cable protection, including rock or concrete matting (8 feet long by 39 feet wide [2.4 m long by 12 m wide]). The number of cable approaches per foundation will vary by foundation; 5 WTG may have one cable approach (11,700 ft^2 [1,087 m^2]) of cable protection) 8 WTG may have two cable approaches (23,400 ft^2 [2,173.9 m^2]), two WTG may have three cable approaches (35,100 ft^2 [3260.9 m^2]), and the OSS may have up to four cable approaches (46800 ft^2 [4348 m^2]). Under these assumptions, total cable protection for the approach to all foundations will be 7.5 acres (4.2 ha), based on a total length of 1.8 miles (2.8 km, 1.5 nm) and a width of 39 feet (12 m).

[e] Conservatively assumes that temporary seabed disturbance will include a maximum temporary disturbance of 33 feet (10 m), based on a total length of 21.4 miles (34.4 km, 21.4 nm). Temporary disturbance includes installation equipment with a maximum disturbance of 25 feet (7.5 m) and use of controlled flow excavator with additional disturbance of 8.2 feet (2.5 m) width.

[f] Additional temporary disturbance may also include boulder relocation during seabed preparation. Boulder relocation may occur within 65 feet (20 m) of each side of the inter-array centerline. The temporary seabed disturbance includes 98.4 feet (30.0 m) width, in addition to cable installation of the Inter-array Cable.

3.1.2.4 Offshore Substation

The OSS will collect electric energy generated by the WTGs through the Inter-array Cables for transmission through the SFEC to the SFEC - Interconnection Facility. While the equipment on the OSS will serve several purposes, its primary purpose is to transform and step up voltage from the Inter-array Cable to the SFEC. A rendering of the conceptual design for the OSS is provided on Figure 3.1-4.

The OSS will also house the Supervisory Control and Data Acquisition (SCADA) system that serves as the means for wind farm monitoring and control between the WTGs, substation, and onshore remote operation center(s). Power metering and protection relays will be in the OSS, which will be coordinated with similar relays located in the SFEC - Interconnection Facility so that the Inter-array Cable and the SFEC operate within design boundaries and can be disconnected from all power sources, if necessary.

The OSS will consist of high voltage power transformer, reactor, and switchgears together with secondary medium voltage transformers, switchgears, and utility equipment, including heating, ventilation, and air conditioning systems. The substation may also include a small permanent diesel generator, which will have a maximum power up to 400 hp and up to a 500-gallon diesel tank with secondary containment. The OSS may include boat landing and helicopter access (i.e., helideck) for emergency transport and limited maintenance activities, including transport of crew and supplies.

The OSS will be above the water located either on a platform supported by a foundation similar to those used for the WTGs, or co-located on a foundation with a WTG. If the OSS is located on its own foundation, the total height of the substation will be 150 to 200 feet (45.7 to 61 m), measured from MSL to the top of the substation. If the substation is co-located with a WTG on a single foundation, the substation will be placed on the foundation such that the total maximum height of the WTG does not exceed the total height of other WTGs (as depicted on Figure 3.1-3).

Appendix G includes a conceptual design of the OSS, for both standalone and co-located foundation.

Figure 3.1-4. Offshore Substation

Conceptual three-dimensional rendering of the proposed offshore substation, note wind turbine generators in picture are conceptual, not scaled for height or spacing.

3.1.2.5 South Fork Wind Farm Operations and Maintenance Facility

The only ancillary facility that will be built as an integrated operational component of the SFWF is the onshore SFWF O&M facility where SFWF O&M staff can prepare and mobilize from this location for offshore maintenance activities, monitor the wind farm, and/or access storage space for spare parts and other equipment to support maintenance activities. The SFWF O&M facility will be located in a port in Montauk in East Hampton, New York or at Quonset Point in North Kingstown, Rhode Island, and will be utilized during the duration of the Project.

The SFWF O&M facility will include building(s) that provide office space (a maximum of up to approximately 1,000 square feet) equipment storage space (a maximum of up to approximately 6,600 square feet at Montauk and up to approximately 11,000 square feet at Quonset Point), a stationary crane for equipment transfer, up to three vessel berths for the crew transfer vessels (CTV), as well as accommodations for parking spaces, additional containers for equipment storage, and minor surface improvements.

Modifications at the Port of Montauk may also include reinforcement and/or rehabilitation of quayside(s), as well as both initial and maintenance dredging to support the CTVs. These modifications are not anticipated to be required at Quonset Point.

3.1.3 Construction

This section describes the construction process of the SFWF based on typical methods, vessels, and equipment.

Before construction begins, DWSF will finalize contracts with vendors and fabrication and installation contractors. DWSF will also finalize mobilization plans and arrangements at port facilities to support Project activities, including logistic support for fabrication, as needed.

It is assumed that certain Project components will be pre-fabricated prior to arrival at regional ports (e.g., blades and nacelles). Some fabrication and pre-assembly activities, particularly for the foundations, may occur at regional ports. Foundations and WTGs components may be staged and loaded at regional ports and transported to the SFWF. Onshore fabrication and manufacturing of the offshore components will take place in the years before and during offshore construction.

The general process for installation of the SFWF involves the installation of the foundations to the sea floor via pile driving, and preparation of the structures for the WTGs. Work vessels then supply and assemble all the WTG components and install them on the foundations. All installation activities will occur within the MWA (Figure 3.1-1; Location Plat included in Appendix F).

Although some activities may overlap, offshore construction for the SFWF is anticipated to be completed in the following general sequence, which is further described in subsequent sections:

- Mobilization of vessels
- Transportation of the foundations to the WTG installation site
- Installation of the foundations
- Installation of the OSS
- Installation of the Inter-array Cable
- Installation of the WTGs

The WTG commissioning phase begins when the first WTG is installed offshore.

3.1.3.1 Ports, Vessels and Vehicles, and Material Transportation

Port Facilities

During construction, several existing port facilities located in New York, Rhode Island, Massachusetts, Connecticut, New Jersey, Maryland, and/or Virginia may be temporarily utilized to support offshore construction, assembly and fabrication, crew transfer and logistics. Figure 3.1-7 and Table 3.1-5 provide additional information about the potential Project activities that may occur at selected ports. At this time no final determination has been made concerning the specific location(s) of these activities, which are limited in scope, temporary in nature, and could take place at various locations.

DWSF expects that a number of upgrades or modifications at several ports throughout the northeast – including but not limited to those under consideration by DWSF - will occur in the future to support the offshore wind industry. If and when the port owner or lessor makes any necessary upgrades or modifications, DWSF may consider use of that port for the Project. The majority of ports that can support the Project's needs for crew transfer, cargo logistics, and storage are not anticipated to require expansion of or modifications to existing infrastructure However, in the event that such locations undertake expansions or modifications, the port owner or lessor will be responsible for securing the necessary federal, state and local permits and overseeing the construction.

For example, port modifications may occur at the Port of Providence, which is being considered for use by DWSF. Modifications at the Port of Providence may include erection of a temporary buildings for storage and offices (up to 15,000 ft^2 [1,393 m^2]), as well as localized reinforcement of terrestrial bearing capacity and changes to surface materials to support laydown and staging of Project components, (e.g., WTGs and foundations). DWSF understands that none of these modifications at the Port of Providence involve expansion of the port infrastructure or would include in-water or onshore work requiring federal permits.

Table 3.1-5. Potential Project Port Facilities

Anticipated ports that may be utilized during construction, operations, and decommissioning of South Fork Wind Farm and South Fork Export Cable.

State	Port	Town	Summary of Potential Project Activities	
			Fabrication, Assembly, Deployment, Decommissioning	Crew Transfer, Cargo Logistics and Storage
New York	Port of Montauk	Montauk		❍
	Shinnecock Fish Dock	Hampton Bays		❍
	Greenport Harbor	Greenport		❍
Rhode Island	Port of Providence	Providence	❍	
	Port of Davisville and Quonset Point, Quonset Development Corporation	North Kingstown	❍	❍
	Old Harbor and New Harbor	New Shoreham		❍
	Port of Galilee	Point Judith		❍

Table 3.1-5. Potential Project Port Facilities
Anticipated ports that may be utilized during construction, operations, and decommissioning of South Fork Wind Farm and South Fork Export Cable.

State	Port	Town	Summary of Potential Project Activities	
			Fabrication, Assembly, Deployment, Decommissioning	Crew Transfer, Cargo Logistics and Storage
Massachusetts	New Bedford Marine Commerce Terminal	New Bedford	❍	❍
Connecticut	Port of New London	New London	❍	❍
New Jersey	Paulsboro Marine Terminal	Paulsboro	❍	
Maryland	Sparrows Point	Baltimore	❍	
Virginia	Port of Norfolk	Norfolk	❍	

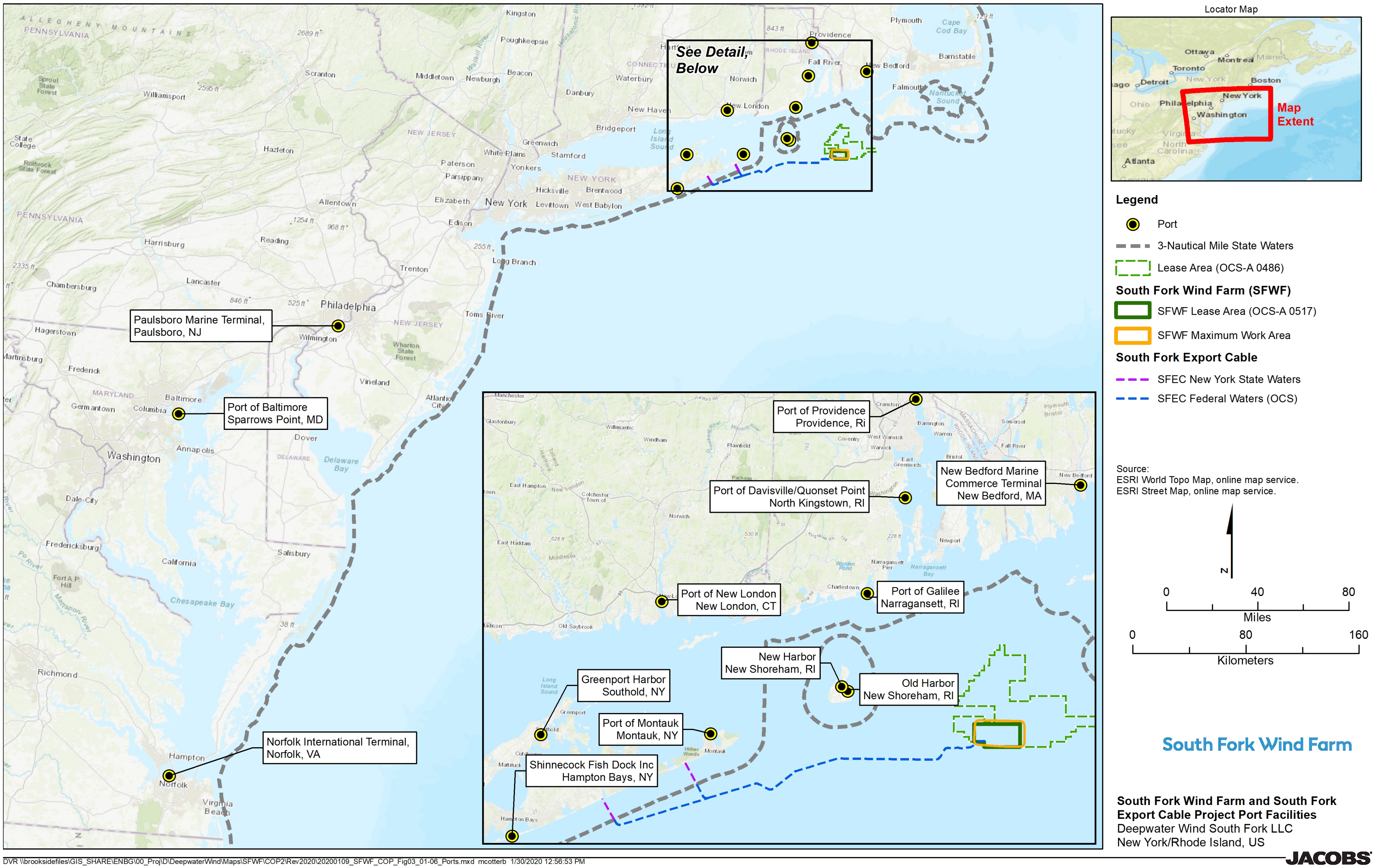

Figure 3.1-5 Locations of Project Port Facilities

Anticipated ports that may be utilized during construction, operations, and decommissioning of South Fork Wind Farm and South Fork Export Cable.

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