

Empire Offshore Wind LLC

Empire Wind 2 Project
Article VII Application

Exhibit E-6
Effect on Transportation

June 2022

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ACRONYMS AND ABBREVIATIONS

AADT	Average Annual Daily Traffic
AIS	Automatic Identification System
BOEM	Bureau of Ocean Energy Management
Empire, the Applicant	Empire Offshore Wind LLC
EW 2	Empire Wind 2
ft	feet
HVAC	high-voltage alternating-current
km	kilometer
kV	kilovolt
Lease Area	Bureau of Ocean Energy Management-designated Renewable Energy Lease Area OCS-A 0512
m	meter
mi	mile
MTA	Metropolitan Transportation Authority
nm	nautical mile
NOAA	National Oceanic and Atmospheric Administration
NY Project	EW 2 Project transmission facilities in New York
NYISO	New York Independent System Operator, Inc.
NYSPSC or Commission	New York State Public Service Commission
POI	Point of Interconnection at an expansion of the Barrett 138-kV Substation
PSL	New York Public Service Law
TMP	Traffic Management Plan
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
VTSNY	USCG Vessel Traffic Service New York

EXHIBIT E-6: EFFECT ON TRANSPORTATION

E-6.1 Introduction

Empire Offshore Wind LLC (Empire or the Applicant) proposes to construct and operate the Empire Wind 2 (EW 2) Project as one of two separate offshore wind projects to be located within the Bureau of Ocean Energy Management (BOEM) designated Renewable Energy Lease Area OCS-A 0512 (Lease Area). The EW 2 Project will require an electric transmission system to connect the offshore wind farm to the point of interconnection (POI) to the New York State Transmission System. An electric transmission line with a design capacity of 125-kilovolt (kV) or more, extending a distance of one mile or more, is subject to review and approval by the New York State Public Service Commission (Commission or NYSPSC) as a major electric transmission facility pursuant to Article VII of the New York Public Service Law (PSL). The EW 2 Project transmission system will extend a total of approximately 12.1 miles (mi) (19.5 kilometers [km]) within the State of New York and includes 230-kV export cable circuits and 345-kV interconnection cable circuits. As such, this application is being submitted to the Commission pursuant to Article VII of the PSL for the portions of the EW 2 Project transmission system that are located within the State of New York (collectively, the NY Project).

The NY Project will interconnect to the New York State Transmission System operated by the New York Independent System Operator, Inc. (NYISO) at the Oceanside POI, located at an expansion of the Barrett 138-kV Substation. The Barrett 138-kV Substation is owned by the Long Island Power Authority (LIPA) and operated by PSEG Long Island (PSEG-LI) and is located in Oceanside in the Town of Hempstead, New York. The NY Project will enter LIPA's substation at 345 kV, where the voltage will be converted to 138-kV within the POI. The onshore portion of the NY Project will be located entirely within Nassau County, New York.

The NY Project includes:

- Three three-core 230-kV high-voltage alternating-current (HVAC) submarine export cables located within an approximately 7.7-nautical mile (nm, 14.2-km)-long submarine export cable corridor from the boundary of New York State waters 3 nm (5.6 km) offshore to the cable landfall;
- A cable landfall in the City of Long Beach, New York;
- Three 230-kV onshore export cable circuits, each with three single-core HVAC onshore export cables within an approximately 1.5-mi (2.4-km)-long onshore export cable corridor from the cable landfall to the onshore substation;
- An onshore substation in the Village of Island Park, within the Town of Hempstead, New York, which will step up the voltage to 345-kV for the onshore interconnection cables; and
- Up to three 345-kV interconnection cable circuits, each with three single-core HVAC interconnection cables within an approximately 1.7-mi (2.8-km)-long interconnection cable corridor from the onshore substation to the POI.

This Exhibit addresses the requirements of 16 New York Codes, Rules and Regulations § 88.6 and provides a statement describing the potential effects of the proposed line and its related facilities on airports, railroads, and other transportation systems. Information provided in this Exhibit is based on a review of publicly available data of roadway, rail, air, and waterborne transportation.

E-6.2 Roadway Transportation

This section presents the existing roadway network adjacent to the onshore substation parcel and along the onshore export and interconnection cable corridors. This section also describes the potential impacts of the construction, operation, and maintenance of the NY Project to area roadways, as well as proposed mitigation measures that will be used to minimize potential impacts.

E-6.2.1 Existing Roadway Conditions

The onshore NY Project facilities are located in the Town of Hempstead, Village of Island Park, and City of Long Beach. An overview of the roadway network in the NY Project Area is shown in **Figure E-6.2-1**. A summary of roads in the NY Project Area is provided in **Table E-6.2-1**. **Table E-6.2-2** summarizes the cross streets along the NY Project Route.

The NY Project's export cable route will make landfall at a mostly bare, vacant parcel adjacent to East Broadway, as well as a portion within the City of Long Beach public right-of-way within East Broadway and Riverside Boulevard. From the cable landfall, the onshore export cables will traverse east along East Broadway, then will turn north onto Lincoln Boulevard, crossing East Park Avenue along the way. From Lincoln Boulevard, the onshore export cables will continue north until East Harrison Street, and then turn west. The onshore export cables then cross perpendicular to Long Beach Boulevard and turn north onto Long Beach Road, to the crossing at Reynolds Channel. On the north side of Reynolds Channel, the onshore export cables enter the onshore substation in the Village of Island Park, New York. **Figure E-6.2-2** provides the street map for the onshore export cable route.

From the onshore substation, the interconnection cable route will parallel the east side of the Long Island Rail Road (LIRR) corridor, and traverse the parking lot of the LIRR Island Park Station north of Long Beach Road. To the north of the Island Park Station, the route will cross to the west side of the LIRR and follow the LIRR corridor north to Parente Lane. The interconnection cable route will continue from Parente Lane north onto D'Amato Drive and cross Long Beach Road. The route will then immediately turn north on North Nassau Lane. At the end of North Nassau Lane, the interconnection cables will continue north across private property and continue adjacent to the west side of the LIRR corridor. The proposed interconnection cable route crosses Barnums Channel for approximately 300 feet (ft, 91 m) on the west side of the LIRR bridge. At the north end of the interconnection cable route, the route will cross Daly Boulevard, in Oceanside, before entering the POI. **Figure E-6.2-3** provides the street map for the interconnection cable route.

Table E-6.2-1 Summary of Roadways along the NY Project Route

NY Project Facility	Road Name a/	Approx. Roadway Width	Number of Lanes	Average Annual Daily Traffic (volume in 24 hrs) a/
Onshore Export Cable Route	East Broadway	36 ft	2	7,001
Onshore Export Cable Route	Lincoln Boulevard	46 ft	2	2,868
Onshore Export Cable Route	East Harrison Street	35 ft	2 (divided)	Not Available
Onshore Export Cable Route	Long Beach Boulevard	68 ft	2	43,681

NY Project Facility	Road Name a/	Approx. Roadway Width	Number of Lanes	Average Annual Daily Traffic (volume in 24 hrs) a/
Onshore Export Cable Route	Long Beach Road	42 ft	2 (divided)	9,101
Onshore Export Cable Route	Park Place	40 ft	2 (divided)	Not Available
Interconnection Cable Route	Railroad Place b/	32 ft	2	Not Available
Interconnection Cable Route	Station Plaza	42 ft	2	2,349
Interconnection Cable Route	Parente Lane	26 ft	2	Not Available
Interconnection Cable Route	D'Amato Drive	24 ft	2	Not Available
Interconnection Cable Route	N Nassau Lane	24 ft	2	739

Note:

a/ Based on the most recent New York State Department of Transportation Average Annual Daily Traffic (AADT) data for 2019 (NYSDOT 2020).

b/ Railroad Place is within the onshore substation site.

Table E-6.2-2 Cross Streets along the NY Project Route

NY Project Facility	Road Name a/	Approx. Roadway Width	Number of Lanes	Average Annual Daily Traffic (volume in 24 hrs) a/
Onshore Export Cable Route	Long Beach Boulevard (from Boardwalk to Park)	68 ft	2	4,966
Onshore Export Cable Route	East Penn Street	34 ft	2	Not Available
Onshore Export Cable Route	East Beech Street	34 ft	2	2,208
Onshore Export Cable Route	East Olive Street	34 ft	2	Not Available
Onshore Export Cable Route	East Walnut Street	34 ft	2	Not Available
Onshore Export Cable Route	East Park Avenue	155 ft	6 (divided)	31,154
Onshore Export Cable Route	East Chester Street	34 ft	2	Not Available
Onshore Export Cable Route	East Market Street	34 ft	2	Not Available

NY Project Facility	Road Name a/	Approx. Roadway Width	Number of Lanes	Average Annual Daily Traffic (volume in 24 hrs) a/
Onshore Export Cable Route	East Hudson Street	34 ft	2	Not Available
Onshore Export Cable Route	East Fulton Street	34 ft	2	Not Available
Onshore Export Cable Route	East Pine Street	34 ft	2	2,558
Onshore Export Cable Route	Monroe Boulevard	34 ft	2	4,103
Onshore Export Cable Route	Long Beach Boulevard (from East Park St to Island Pk VI)	68 ft	2	43,681
Onshore Export Cable Route	Long Beach Boulevard (from Long Bch Ctyl to Station Plz)	58 ft	2	9,101
Interconnection Cable Route	California Place North	24 ft	2	Not Available
Interconnection Cable Route	Long Beach Road	42 ft	2	9,650
Interconnection Cable Route	Waterford Road	28 ft	2	Not Available
Interconnection Cable Route	Daly Boulevard	62 ft	4 (divided)	24,652

Note:

a/ Based on the most recent New York State Department of Transportation AADT data for 2019 (NYSDOT 2020).

The AADT volume provides a basis for projected future traffic volumes. The AADT is defined as an estimated average daily traffic volume on a certain route segment and is used by both federal and state agencies to determine the average traffic volume on a particular road. AADT volumes are taken from traffic count stations, which are short, pre-determined portions of a road over which traffic volumes are approximately equal (NYSDOT 2016). Considerably higher or lower values often result in areas of seasonal activities and/or when comparing weekend versus weekday traffic (NYSDOT 2017).



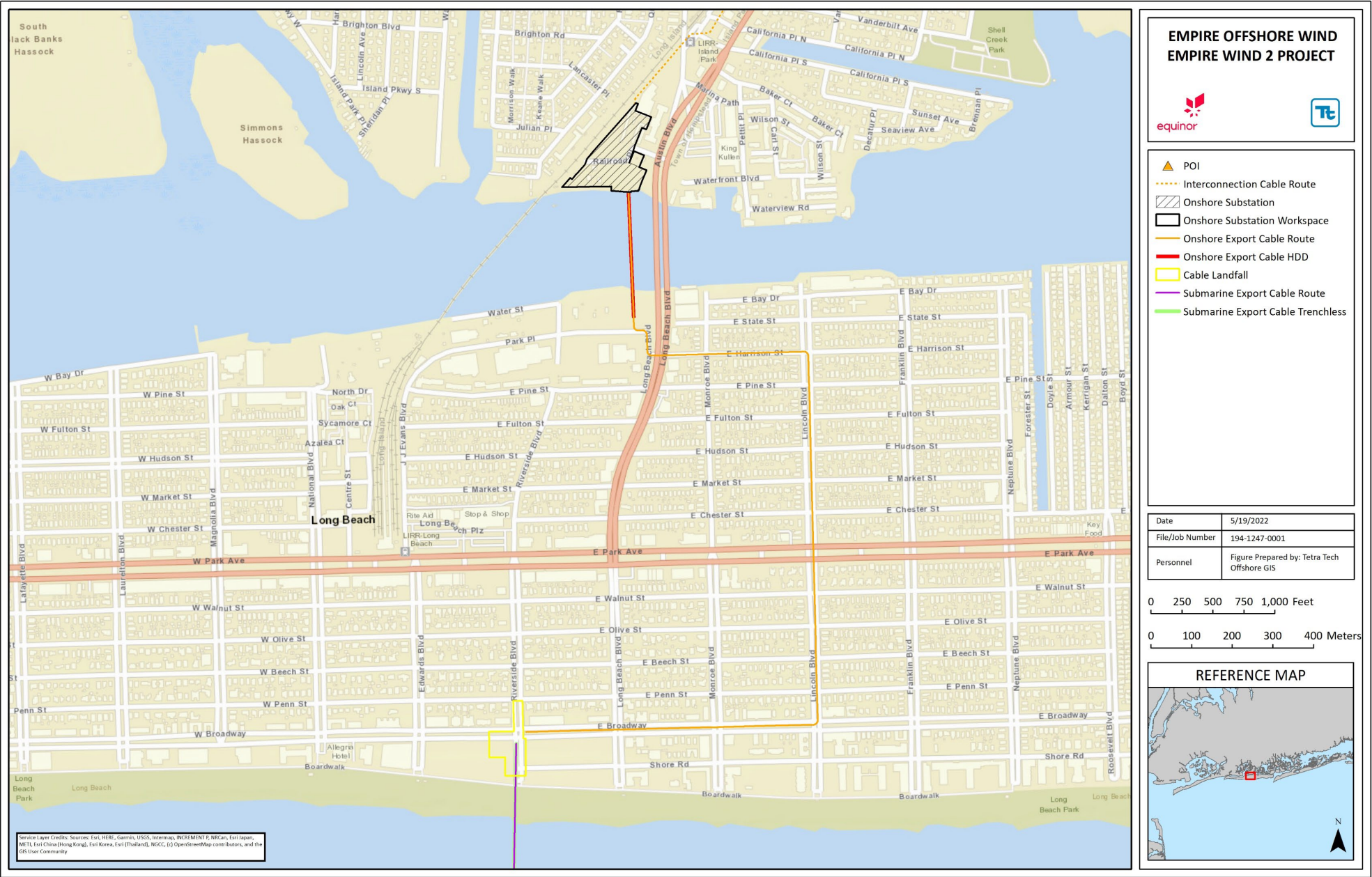


Figure E-6.2-2 Roadway Network along the Onshore Export Cable Route



E-6.2.2 Potential Roadway Construction Impacts and Proposed Mitigation

During construction, the potential impact-producing factors to land transportation and traffic may include:

- Construction of the onshore export and interconnection cables, including duct banks and splice bays (installation techniques include open cut trenching and trenchless installation);
- Transportation of materials to and from temporary staging and laydown areas and to NY Project construction workspaces; and
- Construction of the new onshore substation.

The following impacts may occur as a consequence of the factors identified above:

- Short-term, minor increase in project-related construction vehicle traffic, including workforce; and
- Short-term, minor modification of local traffic patterns.

Short-term increase in construction vehicle traffic. An increase in project-related construction, support, and workforce vehicle traffic along the onshore export and interconnection cable routes and to/from the onshore substation and cable landfall is anticipated during construction. Construction crews and equipment will utilize existing roadway systems for the onshore export and interconnection cable installation, and for access to the onshore substation and cable landfall site. Due to the relatively small number of workers expected, the potential impact of construction vehicle traffic on land transportation and local traffic during construction activities is anticipated to be minor, and similar in nature to other utility installations or road improvement work carried out in these locations.

Short-term, temporary modification to local driving patterns. Installation of the onshore export and interconnection cables, onshore substation and cable landfall may result in the temporary closure of roads, sections of roads (e.g., a traffic lanes), and/or parking lots at various points during construction. Roadways will not be closed and/or blocked for long periods of time, to allow for local vehicular traffic patterns to be maintained to the extent practicable. Parking lots may be closed for the duration of construction and installation activities; however, the Applicant will work with the local municipalities to offset this impact. Should road or lane closures be necessary, the Applicant's contractor will use traffic control measures, such as signage and traffic flaggers, to ensure safety. The Applicant will also coordinate with local government with regard to the scheduling of construction activities as it relates to traffic impacts. The Applicant proposes to implement the following measures to avoid, minimize, and mitigate impacts:

- The development of a Traffic Management Plan (TMP), in coordination with the affected municipalities and/or Nassau County, as applicable;
- The development of project-related vehicle routes to construction areas, which are consistent with existing traffic, to the extent practicable;
- Sufficient parking on-site to support workers;
- Regular updates to the local community through social media, public notices, and/or other appropriate communications tools (see also **Appendix B Public Involvement Plan**);
- Temporary, localized construction zones to minimize areas or sections of road closure; and
- Highly visible marking and lighting of active construction sites, as needed.

The TMP will be provided as part of the Applicant's Environmental Management and Construction Plan and will address the management of roadway transportation during construction activities. Upon completion of cable installation, all roadway conditions will be restored to pre-construction conditions, as applicable.

E-6.2.3 Potential Roadway Operations Impacts and Proposed Mitigation

During operations, the potential impact-producing factors to land-based transportation and traffic uses may include the operations and maintenance activities associated with the onshore export and interconnection cables and presence of the onshore substation.

The onshore substation will be unmanned during routine operations and will only be inspected periodically; therefore, the number of workers transiting by vehicle during such periods is anticipated to be low. Personnel will be on site as necessary for any maintenance and repairs. The onshore substation will contain sufficient parking on-site to support onshore operations and maintenance workers, which will further avoid, minimize, and mitigate impacts. Accordingly, ongoing operations are not expected to result in a noticeable increase to existing regular vehicle traffic volumes in the area.

As part of the onshore substation site layout (see **Exhibit 5: Design Drawings**), the Applicant is proposing a realignment of the end of Railroad Place in the Village of Island Park. Railroad Place currently experiences little traffic and dead-ends into the LIRR right-of-way. The Applicant will coordinate with the Village of Island Park regarding this permanent change to the existing road right-of-way, and with the LIRR to regarding maintenance of LIRR right-of-way access, if necessary. Modification of Railroad Place represents a long-term change, and is not expected to affect any surrounding local traffic patterns since the affected portion of the road is an existing dead-end.

During operations, the onshore export and interconnection cables within roadways will operate underground and are not anticipated to impact general day-to-day traffic in the area. Routine maintenance, inspection of the cable system, or vault access may be required periodically, and may result in short-term and minor impacts to daily traffic. Maintenance and inspection events are anticipated to be localized and will be coordinated with municipalities, Nassau County and/or other applicable agencies, should there be an anticipated impact on roadway transportation.

Air quality related impacts associated with traffic for the construction and operation of the NY Project are addressed in Section 4.13 of **Exhibit 4: Environmental Impact**.

E-6.3 Rail and Bus Routes

This section details the existing rail and bus systems in the vicinity of the NY Project, as well as potential impacts and mitigation to rail and bus routes resulting from the construction, operation, and maintenance of the NY Project.

E-6.3.1 Existing Rail and Bus Routes

Long Island has an extensive rail system that is operated by the LIRR, a department of the Metropolitan Transit Authority (MTA). According to the MTA, the LIRR is the busiest commuter railroad in North America (MTA 2022). The LIRR system runs throughout Long Island, connecting from easternmost end of the Long Island at Montauk and Greenport to Penn Station in New York City. The Long Beach Branch of the LIRR runs from Long Beach Station, located off of W Park Avenue in the City of Long Beach, to Lynbrook Station in Lynbrook, New York, at its northern end. At Lynbrook Station, it joins the Babylon Branch, and continues towards Penn

Station. Based on the recent annual LIRR reports available on the MTA website, the Covid-19 pandemic has caused a significant decrease on LIRR ridership.

Figure E-6.3-1 shows the railway routes in the vicinity of the NY Project. The NY Project interconnection cable route is located along the LIRR corridor for the approximately 1.7 mi (2.8 km)-long route. The interconnection cable route crosses through the Island Park Station parking lot before crossing to the west side of the Long Beach Branch approximately 216 ft north of the station building. The Applicant proposes to collocate a portion of the interconnection cable route within the LIRR right-of-way and is separately coordinating with the LIRR regarding routing and installation requirements as part of the detailed design.

The Nassau Inter-County Express (**Figure E-6.3-2**) has an extensive bus network within Nassau County and Long Island, including Line 15 that connects Long Beach (at the Long Beach LIRR Station) to Garden City, via Long Beach Boulevard and Long Beach Road in the NY Project Area. In addition to the Long Beach LIRR Station, located approximately 0.5 mi (km) southwest of the NY Project Area, Line 15 stops at Warwick Road/Long Beach Road, just to the north of the Island Park LIRR Station, which is crossed by the NY Project interconnection cable route, as well as at Kildare Road/Long Beach Road, which is near the interconnection cable route. Line 33 is located west of the NY Project and runs from Long Beach Station west to Far Rockaway.

The City of Long Beach has two bus loops: the “west loop” that runs from the Long Beach LIRR Station along W Park Avenue, Grand Boulevard and W Beech Street to W Beech Street and Nevada on the western end, and the “east loop” that runs from the Long Beach LIRR Station along E Park Avenue to Maple Boulevard, South to Shore Road, and west along E Broadway to National Boulevard. The NY Project onshore export cable route is directly along the “east loop” route along East Broadway. Monday through Friday, a limited schedule also serves Point Lookout from the Long Beach LIRR Station, stopping at Lido Boulevard and Park, Nickerson Beach and Malibu Beach, among other stops.

Table E-6.3-1 summarizes the bus routes and stops located within the area. In addition to these public bus routes, it is also expected that certain school bus routes may operate in the NY Project Area during the school year.

Table E-6.3-1 Public Bus Routes in the vicinity of the NY Project.

Bus Route #	Bus Route Description	Type of Service
15	Garden City – Long Beach	Inter-County Express
33	Far Rockaway – Long Beach	Inter-County Express
East Loop	Station to Maple and Maple to Station	Local and Trolley Buses



E-6.3.2 Potential Rail and Bus System Impacts and Proposed Mitigation

E-6.3.2.1 Rail System

As described in Section E-6.3.1, the NY Project interconnection cable route is located within or adjacent to the LIRR right-of-way for the majority of its length. The NY Project interconnection cable route will cross the LIRR Long Beach Branch in one location and will also cross the parking area adjacent to the Island Park LIRR Station.

The Applicant is coordinating with the LIRR regarding installation of the interconnection cables within and adjacent to the LIRR right-of-way and will consult with the LIRR to avoid or minimize any service disruptions during construction activities and work along the right-of-way. The Applicant is proposing to use trenchless construction (jack and bore installation) along the onshore interconnection cable route in order to cross the railroad tracks. Cable installation methods are described in **Exhibit E-3: Underground Construction**. Trenchless construction will avoid interference with the railroad tracks or active rail service, and the Applicant will coordinate with applicable stakeholders regarding design and installation requirements for the crossing. Transportation of land-based equipment and construction materials to the NY Project is not anticipated to impact the rail systems. The Applicant will coordinate with applicable stakeholders regarding appropriate vehicle access, equipment, and deliveries to the NY Project Area, prior to construction within the LIRR right-of-way.

Construction activities along the interconnection cable route adjacent to Island Park Station may result in temporary partial closures of the parking area that will affect some available parking spaces and/or may temporarily alter traffic flow patterns into or out of the station area. The Applicant will work with the LIRR and local municipalities to offset this impact. No permanent impacts to the Island Park Station will occur as a result of the NY Project, as the station parking lot area will be restored to pre-construction conditions following the completion of interconnection cable installation activities along this portion of the route.

Workers involved in the construction or operation of the NY Project may utilize public transportation such as the LIRR to access the NY Project; however, this is not anticipated to represent a significant increase in demand on the transportation infrastructure.

Where the interconnection cable is located belowground during NY Project operations, the transmission system is not anticipated to impact the existing rail system or transportation during operations. The NY Project will be designed to operate with minimal day-to-day supervisory input, with key systems monitored remotely 24 hours a day. During operations, the NY Project will require both planned and unplanned inspections and maintenance, which will be carried out by qualified engineers, technical specialists, and associated support staff. The Applicant will ensure that all components are maintained and operated in a safe and reliable manner, compliant with regulatory conditions, and in accordance with commercial objectives. The onshore export and interconnection cables should not require regular maintenance, but occasional repair activities may be required should there be a fault or damage caused by a third party. In the event excavation and repair or replacement of the interconnection cables is needed within the LIRR right-of-way, the Applicant will abide by the terms of its easement agreement to avoid and minimize impacts to the railway.



Along the interconnection cable route, the Applicant will install a cable bridge for the interconnection cable crossing of an inland waterway (Barnums Channel) between the Village of Island Park and the Town of Hempstead. The cable bridge is located parallel to the west side of the LIRR bridge. The cable bridge crossing will use up to two support piles located within the waterway to support the truss system which will hold the cables above the water. The crossing will be located adjacent to the existing LIRR railway bridge. The structure is anticipated to have a total height of up to 15 ft (4.6 m) above mean sea level, with a maximum total height of 30 ft (9.1 m). A conceptual drawing of this cable bridge is provided in **Exhibit 5: Design Drawings**. The installation of a new cable bridge structure parallel to the LIRR bridge has the potential to reduce the accessibility of the bridge from the water, in the case maintenance on the railroad bridge structure is required.

As part of the onshore substation layout (see **Exhibit 5**), the Applicant also anticipates that the end of Railroad Place, where it dead-ends into the LIRR right-of-way, will be blocked. In order to ensure that maintenance access to the railroad can be maintained, if necessary, the onshore substation layout includes provision of space for access continuing to the LIRR right-of-way along the southern edge of the onshore substation site.

As part of coordination with the LIRR on the interconnection cable route, the Applicant will consult with the LIRR regarding maintenance access requirements for the railroad to ensure sufficient maintenance access in the vicinity of the cable bridge and the onshore substation site is maintained.

E-6.3.2.2 Bus System

Installation of the onshore export and interconnection cables, and onshore substation could result in the temporary closure of roads, sections of roads (e.g., a traffic lanes), and/or parking lots at various points during construction. Roadways will not be closed and/or blocked for long periods of time to allow for local vehicular traffic patterns to be maintained to the extent practicable. Parking lots may be closed for the duration of construction and installation activities; however, the Applicant will work with the local municipalities to offset this impact.

Since the NY Project onshore export and interconnection cable routes cross existing bus routes, road or lane closures during installation of the onshore interconnection cables, if necessary, could result in temporary impact or local detours to certain bus routes. The Applicant proposes to implement the following measures to avoid, minimize, and mitigate impacts:

- The development of a TMP, in coordination with the affected local municipalities and stakeholders, as applicable;
- Temporary, localized construction zones to minimize areas or sections of road closure;
- Highly visible marking and lighting of active construction sites; and
- Regular updates to the local community through social media, public notices, and/or other appropriate communications tools.

The Applicant will coordinate with the affected municipalities on any temporary impacts to bus routes during construction activities. Workers involved in the construction or operation of the NY Project may utilize public transportation such as buses to access the NY Project; however, this is not anticipated to represent a significant increase in demand on the transportation infrastructure.

No operational impacts to bus systems are anticipated since the onshore export and interconnection cables within the roadway will be located entirely underground. As described in Section E-6.3.2.1, the onshore export and interconnection cables should not require regular maintenance, but occasional repair activities may be

required should there be a fault or damage caused by a third party. In the event excavation and repair or replacement of the onshore export and interconnection cables is needed, minor temporary impacts to roadways, similar to those described during construction could occur. The Applicant will abide by the terms of agreements with the Town of Hempstead, City of Long Beach, Village of Island Park, and/or Nassau County, according to the appropriate jurisdiction, for the completion of maintenance activities.

E-6.4 Airports, and Heliports

This section details the existing air transportation services (airports, heliports, and seaplane bases) within the vicinity of the NY Project as well as potential impacts and mitigation associated with construction, operation, and maintenance of the NY Project. Note that there are no seaplane bases in the vicinity of the NY Project.

E-6.4.1 Existing Air Transportation Conditions

Several commercial and private air transportation services are located within the area surrounding the NY Project, including airports, heliports, and seaplane bases (**Figure E-6.4-1**). Approximate distances from the onshore substation to each air facility are presented in **Table E-6.4-1**.

Table E-6.4-1 Airports, Heliports and Seaplane Bases within 10 mi (16 km) of NY Project Components

Name	Location	Type	Distance (miles) a/	Direction
Airports				
John F. Kennedy International Airport	New York, NY	Airport	6.94	W/NW
Heliports				
Belmont Park	Belmont, NY	Heliport	8.47	NNW
EAB Plaza	Uniondale, NY	Heliport	9.21	NNE
Freeport	Freeport, NY	Heliport	5.91	NE
Mary Immaculate hospital	Jamaica Queens, NY	Heliport	10.68	NW
Medical Center	Hempstead, NY	Heliport	10.33	NE
Peninsula Hospital Center	Far Rockaway, NY	Heliport	6.35	W
Print Pad	Freeport, NY	Heliport	5.8	NE
Winthrop University Hospital	Mineola, NY	Heliport	9.9	N

Note:

a/ Distance from airport/heliport measured from nearest edge of air facility property to the approximate onshore substation location.

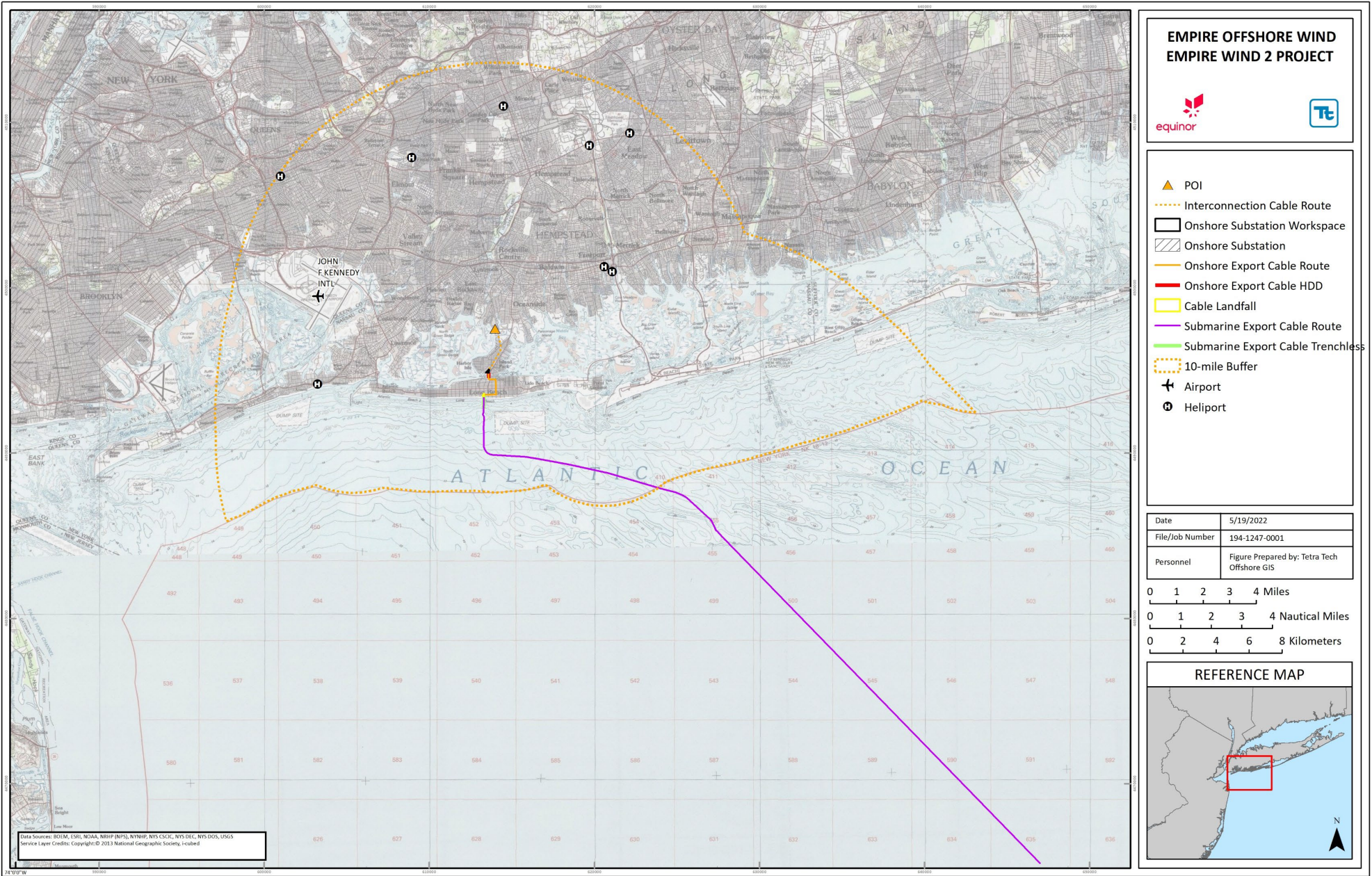


Figure E-6.4-1 Airports and Heliports in the Vicinity of the NY Project

E-6.4.2 Potential Air Transportation Impacts and Proposed Mitigation

Construction and operation of the NY Project will not impact air transportation activities. The submarine export cable will be buried below the seabed and no above-water structures are proposed within state waters. The onshore export and interconnection cables will be installed predominantly along existing roadway and railroad rights-of-way, and no transmission towers are proposed. The only proposed aboveground components are the onshore substation and the proposed cable bridge across Barnums Channel. Vertical construction of the onshore substation and the cable bridge will not impact or interfere with air traffic or communications and will meet industry standards regarding electrical interference (see **Exhibit E-5: Effect on Communications**); therefore, no mitigation for air transportation is proposed.

E-6.5 Marine Navigation

This section details the navigable waterways traversed by the NY Project's submarine export cable route. Potential impacts and mitigation to navigation resulting from construction, operation, and maintenance of the submarine export cable are also discussed.

E-6.5.1 Existing Marine Navigation Conditions

The New York Bight is one of the busiest areas for commercial vessel traffic on the Eastern Seaboard with a large number of vessels transiting through these waters to and from New York Harbor and the ports New York and New Jersey. In addition, there are a number of commercial and recreational fishing vessels that transit and fish in the waters in and near the Lease Area. The coastal New York Bight waters are also a favorite area for other recreational uses such as sailing races, surfing, diving, sightseeing, and cruising. As these shared uses have grown over many years, regulations and routing measures have been put in place to mitigate the risks of collisions and other marine casualties that are elevated by the variety and volume of vessel traffic in the area. The International Maritime Organization (IMO), in cooperation with the U.S. Coast Guard (USCG) and National Oceanic and Atmospheric Administration (NOAA), has the responsibility for approving new or amended routing measures in the ports of all signatory nations. The approaches to the area controlled by the Port Authority of New York and New Jersey have a routing measure made up of three traffic separation schemes (TSSs) to help control vessel traffic routing and to provide a separation between vessels on opposite headings and to manage traffic crossing the TSS lanes.

The submarine export cable corridor lies within NOAA Nautical Charts 12300, 12326, and 12352 (NOAA). The submarine export cable transits from the 3 nm (5.6 km) state boundary generally northwest towards the barrier island of Long Beach. The area along the southern shore of Long Beach and approaching Jones Inlet is traversed by commercial and recreational vessels throughout the year.

NY Project installation activities will be closely coordinated with local, state, and federal agencies including the U.S. Army Corps of Engineers (USACE); USCG Sector New York; USCG Sector Long Island; and the USCG Vessel Traffic Service New York (VTSNY). Local Notices to Mariners will be posted with in-water installation activities and schedules.

E-6.5.1.1 Ferry Terminals and Routes

There are no ferry terminals or ferry routes located within 5 mi (km) of the NY Project. The closest ferry terminal is at Rockaway, approximately 9 mi (km) to the west of the NY Project, which serves Brooklyn and Manhattan, New York.

E-6.5.1.2 Navigation Channels and Anchorages

The submarine export cable route has been carefully sited to minimize impact to federal navigation channels and anchorages to the extent practicable. The NY Project route avoids crossing any federal navigation channels and anchorages.

E-6.5.1.3 Cables and Pipelines

Several charted cables are crossed by the NY Project. It is anticipated that there will be four crossed active or planned cables along the submarine export cable route:

- The FLAG Atlantic South telecommunications cable: active;
- The Poseidon Transmission Cable: planned;
- The Wall-LI telecommunications cable: planned; and
- The Neptune HVDC to Long Beach, New York: planned.

In addition to those cables identified, the submarine export cable routes also cross several charted out-of-service cables and cable areas identified on the NOAA charts. Recent geophysical survey activities have not positively identified cables within the cable areas; however, it is anticipated that that cable crossings may be required in some locations.

The proposed NY Project submarine export cable also crosses the Transco New York Lower Bay Lateral 26-in pipelines (potential pipeline crossings along route alternatives are additionally discussed in **Exhibit 3**). **Figure 2.2-5 in Exhibit 2: Location of Facilities** depicts active and potential out-of-service cable and pipelines in the vicinity of the NY Project, which have been identified in the Applicant's survey activities or through permit review. The Applicant continues to consult with asset owners to confirm the locations of submarine cable assets, including any active and out-of-service cables and pipelines.

E-6.5.2 Potential Construction Impacts and Proposed Mitigation

Potential impacts to marine navigation associated with the submarine export cable installation are anticipated to be short-term (up to approximately 2 months per cable) and localized. An increase in vessel traffic associated with project-related construction and support vessels along the submarine export cable route is anticipated during construction. This may include transportation of materials by barge to temporary staging and laydown areas for NY Project construction. The presence of increased vessel traffic could lead to the displacement of existing vessel traffic to other trafficked areas with an indirect consequence of increased collision or allision risk, as well as the direct risk of collisions with NY Project vessels. Approximately nine vessels are anticipated to be required for cable laying and associated activities, though there may be fewer present depending on the stage of cable laying. Once pre-installation activities are completed, the installation of the submarine export cables is expected to take less than 1 month per cable for the submarine export cable route in New York. The cable installation timeframe including pre-lay and post-lay activities such as survey, pre-sweeping and pre-trenching activities, vessel and material transit, and cable protection installation will be up to approximately 2 months per cable.

During submarine export cable installation, temporary vessel or channel access restrictions may be imposed by the USCG or VTSNY. Cable installation in New York State waters may be conducted from anchored cable lay barges, which would involve additional anchor handling vessels to reposition the anchors as installation moves along the submarine export cable corridor. This activity may also result in temporary disruption or displacement of marine activities within New York Harbor.

In order to avoid, minimize, and mitigate impacts to marine transportation during construction, the Applicant will implement the following measures:

- Continued consultation regarding best practices with stakeholders, including but not limited to the USCG, New York Vessel Traffic Service, and the USACE;
- Highly visible marking and lighting of active construction sites;
- Compliance by vessels associated with the NY Project with international and flag state regulations including the International Regulations for Preventing Collisions at Sea and the International Convention for the Safety of Life at Sea;
- Utilization of existing TSSs, maintained channels, and transit lanes by vessels associated with the NY Project to comply with existing uses and management of the surrounding waterway, to the extent practicable;
- Completion of a Cable Installation Plan, detailing how cable installation will be managed to ensure disruption is minimized within port approaches;
- The Applicant will include a requirement in contracts that all construction vessels be equipped with working Automatic Identification Systems (AIS) transceivers at all times;
- Regular updates to the local marine community through social media and the USCG Local Notices to Mariners;
- Marine coordination for vessels associated with the NY Project (i.e., a central coordination hub from which all NY Project vessel movements will be managed, and third-party traffic will be monitored);
- Minimum advisory safe passing distances for cable laying vessels (where feasible); and
- Monitoring of third-party vessel traffic by AIS.

All in-water installation activities will be closely coordinated with the USCG, VTSNY, and USACE; and Local Notice to Mariners will be posted as required.

E-6.5.2.1 Cable and Pipeline Crossings

The Applicant has planned the routing of the submarine export cable routes to minimize and avoid cable and pipeline crossings to the greatest extent practicable. In addition, where avoidance is not possible, the Applicant has planned submarine export cable routes to cross existing cables and pipelines at as close to right angles as possible in accordance with industry best practices.

All known cables and pipelines potentially impacted by the NY Project will have engineered crossing methodologies. Therefore, impacts to existing assets are not anticipated. The Applicant has conducted extensive high-resolution geophysical survey, including seabed side-scan sonar imagery, marine magnetic mapping, and sub-bottom profiling along the submarine export cable route to confirm the location of known assets and identify any unknown or mis-charted cables or pipelines. Furthermore, pre-installation surveys are proposed to occur along the submarine export cable route. Additionally, the Applicant will require that project-related installation vessels hold construction safety meetings to review supporting charts and/or geospatial data of the location of existing cables and pipelines to be avoided during anchoring and jack-up operations. Therefore, the Applicant does not anticipate inadvertent impacts to unknown seabed assets, due to both the work conducted to date, as well as the work proposed, to identify the location of such assets in the NY Project Area.

The Applicant has approached all known asset owners to establish crossing principles and to seek further information on as-laid positions, depths, and additional engineering data. Additionally, the Applicant will provide adequate notice to the asset owner and allow for representation during installation operations at a crossed cable or pipeline.

Empire has also reached out to subsea cable industry owners' organizations, such as the International Cable Protection Committee (ICPC) and the North American Submarine Cable Association (NASCA) to provide the organization's members with the submarine export cable route for consideration and comments in regard to active or planned subsea cables, in accordance with BOEM recommendations within the COP Guidelines (BOEM 2016).

The Applicant has evaluated a variety of submarine export cable crossing methods for cable assets (see **Exhibit 3**). This included evaluation of in-water trenchless crossing methods, pile-supported bridges, artificial reef crossings and traditional crossings with cable protection measures including rock installation or concrete mattresses. In evaluating these methods, the Applicant considered technical feasibility and the potential to reduce impacts to marine navigation from shoaling. Based on challenges associated with other methods, traditional crossings, with either rock or mattress protection, are the preferred asset crossing methods. Additional discussion and cross-sections of asset crossing methods is provided in **Exhibit E-3**.

E-6.5.3 Potential Operational Impacts and Proposed Mitigation

Upon completion of installation activities, the submarine export cable is not anticipated to impact marine navigation during operations, since the submarine export cables will be buried beneath the seafloor or will employ cable protection measures in limited areas where sufficient cable burial is not feasible. Where avoidance of maintained channels and anchorage areas is not feasible, further mitigation, such as deeper cable burial, will be applied. Target burial depth is anticipated to be a minimum of 6 ft (1.8 m) in areas not under federal management (i.e., outside of navigational channels and anchorages). Additionally, the NY Project will implement additional deeper target burial depth where appropriate. Target burial depths will be defined based on risk assessment, stakeholder feedback, and geotechnical conditions.

The submarine export cables will be designed with electrical shielding; therefore, the presence of the cables during operations will not interfere with GPS, radio, or navigational equipment (see **Exhibit E-5**). The submarine export cables will not result in compass deflection for vessels transiting over the cable.

Once installed, the submarine export cables will be charted by NOAA on the latest version of Nautical Charts. The Applicant anticipates that this cable area designation will be published in the Coastal Pilot and Local Notice to Mariners.

The submarine export cables will be monitored during operations through Distributed Temperature Sensing equipment. The Distributed Temperature Sensing system will be able to provide real time monitoring of temperature, alerting the Applicant should the temperature change, which often is the result of a change in cable burial depth, for example caused by scouring of cable covering material. The Applicant will also conduct surveys of the submarine export cables to confirm the cables have not become exposed or that the cable protection measures have not worn away. A Distributed Vibration Sensing system will provide real time vibration monitoring close to the cables indicating potential dredging activities or anchor drag occurring close to the cables. Upon receiving any such alert, the Applicant will warn vessels in the area, investigate the cable condition and identify and take corrective actions, if necessary.

Should one of the submarine export cables fault, the portion of the cable will be spliced and replaced with a new, working segment. If the submarine export cables or cable protection measures require repair, the

submarine export cables require reburial, or new cable protection is required, impacts associated with repair activities will be similar to those described for construction activities, but with a much shorter duration and a more limited area of the cable corridor.

E-6.6 References

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