

Empire Offshore Wind LLC

Empire Wind 1 Project  
Article VII Application

**Exhibit E-5**  
**Effect on Communications**

June 2021

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**ACRONYMS AND ABBREVIATIONS**

BOEM	Bureau of Ocean Energy Management
ConEdison	Consolidated Edison Company of New York, Inc.
Empire, the Applicant	Equinor Offshore Wind LLC
EW 1 Project	Empire Wind 1 Project
FCC	Federal Communications Commission
FM	Frequency modulation
HVAC	high-voltage alternating-current
km	kilometer
kV	kilovolt
Lease Area	BOEM-designated Renewable Energy Lease Area OCS-A 0512
mi	mile
nm	nautical mile
NYISO	New York Independent System Operator, Inc.
NYSPSC or Commission	New York State Public Service Commission
POI	Point of Interconnection at the Gowanus 345-kV Substation
Project	EW 1 Project transmission facilities in New York
PSL	New York Public Service Law
SBMT	South Brooklyn Marine Terminal
TV	television

## EXHIBIT E-5: EFFECT ON COMMUNICATIONS

### E-5.1 Introduction

Empire Offshore Wind LLC (Empire, or the Applicant) proposes to construct and operate the Empire Wind 1 (EW 1) 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 proposed transmission system for the EW 1 Project will connect the offshore wind farm to the point of interconnection (POI), and will include 230-kilovolt (kV) export and 345-kV interconnection lines traversing a total of approximately 17.5 miles (mi) (15.2 nautical miles [nm], 28.2 kilometers [km]) within the State of New York. An electric transmission line with a design capacity of 125 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. This application is being submitted to the Commission pursuant to Article VII of the New York Public Service Law (PSL) for the portions of the EW 1 Project transmission system that are located within the State of New York (collectively, the Project).

The Project will interconnect to the New York State Transmission System operated by the New York Independent System Operator, Inc. (NYISO) at the Gowanus 345-kV Substation (the point of interconnection, or POI). The Gowanus 345-kV Substation is owned by the Consolidated Edison Company of New York, Inc. (ConEdison). The Project's onshore facilities, including the onshore cable route, onshore substation, and the POI, are located entirely within Brooklyn, Kings County, New York.

The Article VII components of the EW 1 Project include:

- Two three-core 230-kV high-voltage alternating-current (HVAC) submarine export cables located within an approximately 15.1-nm (27.9-km)-long, submarine export cable corridor from the boundary of New York State waters 3 nm (5.6 km) offshore to the cable landfall in Brooklyn, New York;
- A 0.2-mi (0.3-km)-long onshore cable route and substation including:
  - Two three-core 230-kV HVAC EW 1 onshore export cables buried underground from the cable landfall either directly to the cable terminations or to a vault within the onshore substation;
  - An onshore substation located at the South Brooklyn Marine Terminal (SBMT), which will increase the voltage to 345 kV for the onshore interconnection cables; and
  - Two 345-kV cable circuits, each with three single-core HVAC onshore interconnection cables, buried underground from the onshore substation to the POI.

This Exhibit addresses the requirements of 16 New York Codes, Rules and Regulations § 88.5 by describing the anticipated effects of the Project on television, radio and other communications systems.

### E-5.2 Effects on Communications

This Exhibit provides information on existing communication systems located in the vicinity of the Project, as well as potential impacts resulting from the construction, operation, and maintenance of the Project.

Federal Communications Commission (FCC) databases of frequency modulation (FM) transmission, microwave service, cellular, paging and land mobile towers, television (TV) transmitters, and antenna structures,

indicate that there are 224 FCC-registered commercial towers located within 1 mi (1.6 km) of the Project (FCC 2018a-2018j), as depicted in **Figure E-5.2-1**. Additional details on the entities' names, locations and FCC identification numbers are provided in **Table E-5.2-1**. Commercial towers include FM transmission towers, microwave service towers, cellular towers, paging transmission towers, private land to mobile transmission towers, commercial land to mobile transmission towers, broadcast land to mobile transmission towers, analog TV station transmitters, digital TV station transmitters, and antenna structures. Given the density of development and structures in the area of Brooklyn, New York, the 1-mi (1.6-km) radius search was determined to be a reasonable distance for identification of those commercial towers closest to the Project.

The EW 1 onshore export cables and onshore interconnection cables (together, onshore cables) are a source of minor electric and magnetic fields due to the voltage applied to the conductors located within the cables. The onshore cables will be installed underground. As an expected minor source of electric and magnetic fields (see Section 4.13 of **Exhibit 4: Environmental Impact**), the Project cables are anticipated to have negligible impacts on communication systems.

Given the New York Bight's long history as a hub of trans-Atlantic and regional telecommunications activity, there are numerous charted cables crossing the submarine export cable route. The current status of many of these charted cables is poorly documented in the public domain, including the National Oceanic and Atmospheric Administration charts, with many of the charted cables dating back to telegraph systems installed up to 135 years ago. As shown in **Exhibit 2: Location of Facilities** and described in **Exhibit E-6: Effect on Transportation**, the Project has identified one potential crossing of an in-service fiber optic cable between Fort Hamilton and Fort Wadsworth. Additional crossings of third-party submarine cables identified for the Project are associated with electric transmission cables, or out-of-service communications cables. In addition to those cables positively identified, the submarine export cable route also crosses several charted out-of-service cables that have not been positively identified, as well as cable areas that are identified on the National Oceanic and Atmospheric Administration charts but where cables may not be present. The Applicant continues to consult with asset owners to confirm the locations of submarine cable assets, including any active communication cables.

Initial survey data also indicates the presence of telephone lines within 2<sup>nd</sup> Avenue along the onshore interconnection cable route. All existing underground utilities along the onshore interconnection cable route will be identified through surveys and coordination prior to the Environmental Management and Construction Plan.

As part of the onshore interconnection cable routing design, the Applicant conducted aerial surveys and field verification of existing utilities and submitted a records request to utility companies operating in the vicinity of the Project, including potential telecommunications lines.

**Table E-5.2-1 FCC Registered Commercial Towers Located within 1 mile of the Project**

Distance from Project (ft)	Entity Name	Tower Type	FCC Identification Number
19	NEW YORK, CITY OF	Land Mobile Transmission Tower	1639493
124	CITY OF NEW YORK DOITT FCC LICENSE SUPPORT	Land Mobile Transmission Tower	1255430
124	NEW YORK CITY TRANSIT AUTHORITY	Land Mobile Transmission Tower	1222162
473	CITY OF NEW YORK, DOITT FCC LICENSE SUPPORT	Microwave Service Tower	1025219
605	ASTORIA GENERATING CO., L.P.	Land Mobile Transmission Tower	1814810
697	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2654529
697	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2654554
697	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2768718
752	CONSOLIDATED EDISON CO. OF NEW YORK, INC	Land Mobile Transmission Tower	1889095
793	BUSINESS ONLY BROADBAND, LLC	Microwave Service Tower	3004149
793	BUSINESS ONLY BROADBAND, LLC	Microwave Service Tower	3004150
793	BUSINESS ONLY BROADBAND, LLC	Microwave Service Tower	3086769
793	BUSINESS ONLY BROADBAND, LLC	Microwave Service Tower	3227876
837	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2654529
837	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767170
837	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767177
837	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2768718
837	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2778171
837	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2778245
837	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2794757
837	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812731
837	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2931944
860	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3189633
860	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3189998
924	CITY OF NEW YORK DOITT FCC LICENSE SUPPORT	Land Mobile Transmission Tower	1211213

Distance from Project (ft)	Entity Name	Tower Type	FCC Identification Number
955	NEXTEL OF NEW YORK INC	Land Mobile Transmission Tower	1165179
1,003	CONSOLIDATED EDISON CO. OF NEW YORK, INC	Land Mobile Transmission Tower	1889086
1,003	ASTORIA GENERATING CO., L.P.	Land Mobile Transmission Tower	1814810
1,172	MTA BRIDGES AND TUNNELS	Land Mobile Transmission Tower	2685420
1,253	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2953833
1,253	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2953836
1,253	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2956879
1,253	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	3111070
1,278	NEXTEL OF NEW YORK INC	Land Mobile Transmission Tower	2535827
1,481	NEW YORK, CITY OF (POLICE DEPARTMENT)	Land Mobile Transmission Tower	3175300
1,491	SHORE HILL HOUSING CO.	Land Mobile Transmission Tower	1798257
1,536	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812168
1,536	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812731
1,561	NEW YORK CITY TRANSIT AUTHORITY	Land Mobile Transmission Tower	1915637
1,573	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3189709
1,573	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3191710
1,643	SHORE HILL HOUSING CO.	Land Mobile Transmission Tower	1791552
1,651	DIAMOND DEALER CLUB	Land Mobile Transmission Tower	1724133
1,666	A R CAR & LIMO CORP	Land Mobile Transmission Tower	1755113
1,678	NEXTEL OF NEW YORK INC	Land Mobile Transmission Tower	2339111
1,678	FCI 900 INC	Land Mobile Transmission Tower	2967475
1,833	NEXTEL OF NEW YORK INC	Land Mobile Transmission Tower	2513733
1,843	HARBORVIEW TRANSPORTATION OF SI	Land Mobile Transmission Tower	1626136
1,868	NORTHROP GRUMMAN SYSTEMS CORPORATION	Microwave Service Tower	2944482
1,868	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2956879
1,868	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	3023407

Distance from Project (ft)	Entity Name	Tower Type	FCC Identification Number
1,936	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3189709
1,936	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3189712
1,936	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3191856
1,936	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3198838
2,008	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3190333
2,008	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3191707
2,056	NEW YORK CROSS HARBOR RAILROAD	Land Mobile Transmission Tower	1916507
2,273	CITY OF NEW YORK DOITT FCC LICENSE SUPPORT	Land Mobile Transmission Tower	1302993
2,300	CITY OF NEW YORK, DOITT FCC LICENSE SUPPORT	Microwave Service Tower	1025219
2,316	ADF COMPANIES	Land Mobile Transmission Tower	2646223
2,319	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2975389
2,319	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2975390
2,319	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2976818
2,319	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2976819
2,344	LUTHERAN MEDICAL CENTER	Land Mobile Transmission Tower	1275203
2,371	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767172
2,371	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767174
2,418	DEPOSITORY TRUST CO.	Land Mobile Transmission Tower	1779454
2,418	DEPOSITORY TRUST CO.	Land Mobile Transmission Tower	1779455
2,418	DEPOSITORY TRUST CO.	Land Mobile Transmission Tower	1779455
2,418	DEPOSITORY TRUST CO.	Land Mobile Transmission Tower	1779456
2,471	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2975387
2,471	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2975388
2,471	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2975389
2,471	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	3111070
2,524	COLLEGE OF STATEN ISLAND CUNY	Land Mobile Transmission Tower	1636115



Distance from Project (ft)	Entity Name	Tower Type	FCC Identification Number
2,532	APPLE INDUSTRIAL DEVELOPMENT	Land Mobile Transmission Tower	1781103
2,653	LUTHERAN MEDICAL CENTER	Land Mobile Transmission Tower	2481256
2,653	LUTHERAN MEDICAL CENTER	Microwave Service Tower	2605093
2,720	LUTHERAN MEDICAL CENTER	Land Mobile Transmission Tower	2784107
2,720	MOUNT SINAI HOSPITAL	Land Mobile Transmission Tower	2876745
2,729	VINCENT MARRA INC	Land Mobile Transmission Tower	3165194
2,729	CITY OF NEW YORKDOITT FCC LICENSE SUPPORT	Land Mobile Transmission Tower	1174440
2,765	NEW YORK, CITY OF (POLICE DEPARTMENT)	Land Mobile Transmission Tower	1261822
2,765	NEW YORK, CITY OF (POLICE DEPARTMENT)	Land Mobile Transmission Tower	1289638
2,793	NEW YORK, CITY OF (POLICE DEPARTMENT)	Microwave Service Tower	1032250
2,793	NEW YORK, CITY OF (POLICE DEPARTMENT)	Microwave Service Tower	2914504
2,796	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2975388
2,796	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2975389
2,796	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2975390
2,807	HOME DEPOT U.S.A., INC	Land Mobile Transmission Tower	2927848
2,830	NEXTEL OF NEW YORK INC	Land Mobile Transmission Tower	2540954
2,830	LUTHERAN MEDICAL CENTER	Land Mobile Transmission Tower	2671473
2,840	BRAVO VOLUNTEER AMBULANCE SERVICE INC	Land Mobile Transmission Tower	1277927
2,840	BRAVO VOLUNTEER AMBULANCE SERVICE INC	Land Mobile Transmission Tower	1277927
2,935	39 LINE TRIP-C-S-INC.	Land Mobile Transmission Tower	3025665
2,937	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3190333
2,937	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3191707
2,965	NEXTEL OF NEW YORK INC	Land Mobile Transmission Tower	2540272
2,973	NEW YORK, CITY OF (POLICE DEPARTMENT)	Land Mobile Transmission Tower	1262091
2,973	NEW YORK, CITY OF (POLICE DEPARTMENT)	Land Mobile Transmission Tower	1262094
3,020	CASTLE CAR SERVICE INC	Land Mobile Transmission Tower	1920301

Distance from Project (ft)	Entity Name	Tower Type	FCC Identification Number
3,157	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2953833
3,157	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2953836
3,157	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2953837
3,179	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3189633
3,179	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3189998
3,185	AT&T CORP.	Microwave Service Tower	3086814
3,185	AT&T CORP.	Microwave Service Tower	3086819
3,205	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767170
3,205	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767171
3,205	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2768718
3,205	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2778176
3,205	LUTHERAN MEDICAL CENTER	Land Mobile Transmission Tower	1604184
3,250	CONSOLIDATED EDISON CO. OF NEW YORK, INC	Land Mobile Transmission Tower	1889272
3,250	CONSOLIDATED EDISON CO. OF NEW YORK, INC	Land Mobile Transmission Tower	1895132
3,266	NEXTEL OF NEW YORK INC	Land Mobile Transmission Tower	1165104
3,269	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2654520
3,269	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2654529
3,269	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2654554
3,270	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812166
3,270	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812731
3,288	RENAISSANCE CHARTER SCHOOL	Land Mobile Transmission Tower	3102017
3,341	ALPHA TRANSPORTATION & LIMOUSINE INC	Land Mobile Transmission Tower	2670144
3,350	CITY OF NEW YORK DOITT FCC LICENSE SUPPORT	Land Mobile Transmission Tower	1208573
3,375	NEXTEL OF NEW YORK INC	Land Mobile Transmission Tower	2505123
3,393	NEW YORK, CITY OF (POLICE DEPARTMENT)	Land Mobile Transmission Tower	1262096
3,435	IKEA NEW YORK, LLC DBA IKEA BROOKLYN	Land Mobile Transmission Tower	3000244

Distance from Project (ft)	Entity Name	Tower Type	FCC Identification Number
3,435	IKEA NEW YORK, LLC DBA IKEA BROOKLYN	Land Mobile Transmission Tower	3000244
3,450	LUTHERAN MEDICAL CENTER	Microwave Service Tower	2605093
3,455	MAURMAC INC DBA MC DONALDS	Land Mobile Transmission Tower	1742194
3,457	DOMINCAN CAR SERVICE	Land Mobile Transmission Tower	1781615
3,480	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767170
3,480	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2778176
3,521	STATEN ISLAND RAPID TRANSIT OPERATING AUTHORITY	Microwave Service Tower	1040912
3,521	STATEN ISLAND RAPID TRANSIT OPERATING AUTHORITY	Microwave Service Tower	1040913
3,600	NEW YORK CITY TRANSIT AUTHORITY	Microwave Service Tower	3216201
3,600	NEW YORK CITY TRANSIT AUTHORITY	Microwave Service Tower	3216202
3,600	NEW YORK CITY TRANSIT AUTHORITY	Microwave Service Tower	3216203
3,652	NEXTEL OF NEW YORK INC	Land Mobile Transmission Tower	2535817
3,667	LUTHERAN MEDICAL CENTER	Land Mobile Transmission Tower	1681197
3,687	NEW YORK, CITY OF	Land Mobile Transmission Tower	1285836
3,722	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767172
3,722	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767174
3,722	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767175
3,722	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767177
3,728	CITY OF NEW YORK DOITT FCC LICENSE SUPPORT	Land Mobile Transmission Tower	1207593
3,729	ESTEE LAUDER COMPANIES INC	Land Mobile Transmission Tower	2679933
3,740	KEYSPAN CORP. DBA KEYSPAN ENERGY	Microwave Service Tower	1013444
3,776	MTA BRIDGES & TUNNELS	Land Mobile Transmission Tower	1146964
3,784	CITY OF NEW YORK DOITT FCC LICENSE SUPPORT	Land Mobile Transmission Tower	1213598
3,794	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2953833
3,794	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2954349
3,794	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2956879

Distance from Project (ft)	Entity Name	Tower Type	FCC Identification Number
3,794	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	3023407
3,794	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	3102044
3,843	NEW YORK, CITY OF (POLICE DEPARTMENT)	Land Mobile Transmission Tower	1261801
3,843	NEW YORK, CITY OF (POLICE DEPARTMENT)	Land Mobile Transmission Tower	1261822
3,870	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767174
3,870	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767175
3,884	DENISE CAR SERVICE INC	Land Mobile Transmission Tower	2611584
3,885	CITY OF NEW YORK DOITT FCC LICENSE SUPPORT	Land Mobile Transmission Tower	1213597
3,927	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3189712
3,927	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3191856
3,935	5TH AVENUE BUSINESS IMPROVEMENT DISTRICT	Land Mobile Transmission Tower	1725685
3,995	NEW YORK, CITY OF (POLICE DEPARTMENT)	Land Mobile Transmission Tower	3178605
4,045	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2768718
4,045	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2778171
4,060	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3189711
4,060	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3189975
4,077	ALEX II CAR SERVICE	Land Mobile Transmission Tower	1788117
4,136	YOURS CAR SERVICE INC	Land Mobile Transmission Tower	3062847
4,233	NEXTEL OF NEW YORK INC	Land Mobile Transmission Tower	2540791
4,244	ROCANO, MANUEL	Land Mobile Transmission Tower	2774771
4,277	TOYS R US INC	Land Mobile Transmission Tower	2943051
4,481	FORCE ONE INT. SECURITY & CONSULTING FIRM INC	Land Mobile Transmission Tower	2992120
4,492	CITY OF NEW YORK DOITT FCC LICENSE SUPPORT	Land Mobile Transmission Tower	1180942
4,507	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3189704
4,507	CLEARWIRE SPECTRUM HOLDINGS III, LLC	Microwave Service Tower	3190048
4,593	SEA GATE POLICE DEPARTMENT	Land Mobile Transmission Tower	2348574

Distance from Project (ft)	Entity Name	Tower Type	FCC Identification Number
4,616	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767174
4,616	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2767177
4,616	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2768718
4,648	FERNANDEZ, MANUEL	Land Mobile Transmission Tower	1665411
4,648	FERNANDEZ, MANUEL	Land Mobile Transmission Tower	1665411
4,651	VALUE CITY DEPARTMENT STORES, INC	Land Mobile Transmission Tower	1635704
4,667	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2654526
4,667	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812731
4,671	CENTURY 21 DEPT STORES	Land Mobile Transmission Tower	2513454
4,671	CENTURY 21 DEPT. STORES	Land Mobile Transmission Tower	2654274
4,671	CENTURY 21 DEPARTMENT STORES	Land Mobile Transmission Tower	2921975
4,673	NEW YORK, CITY OF (POLICE DEPARTMENT)	Land Mobile Transmission Tower	1262097
4,691	NEW YORK, CITY OF (POLICE DEPARTMENT)	Land Mobile Transmission Tower	3178605
4,692	AT&T CORP.	Microwave Service Tower	3086814
4,692	AT&T CORP.	Microwave Service Tower	3113985
4,752	PRATTS, ANGELA	Land Mobile Transmission Tower	1829064
4,803	G & S REALTY 1 LLC	Land Mobile Transmission Tower	2976958
4,807	NORTHROP GRUMMAN SYSTEMS CORPORATION	Microwave Service Tower	2944482
4,807	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2944486
4,807	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	2950108
4,807	NORTHROP GRUMMAN SYSTEMS CORP.	Microwave Service Tower	3023407
4,871	CITY OF NEW YORK DOITT FCC LICENSE SUPPORT	Land Mobile Transmission Tower	1209636
4,875	NEXTEL OF NEW YORK INC	Land Mobile Transmission Tower	2535828
4,929	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2654526
4,929	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2768718
4,929	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812164

Distance from Project (ft)	Entity Name	Tower Type	FCC Identification Number
4,929	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812166
4,929	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812168
4,929	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812169
4,929	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812171
4,929	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812173
4,929	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2812731
4,929	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2813074
4,929	FIBERTOWER NETWORK SERVICES CORP.	Microwave Service Tower	2923456
4,998	SUNSET PARK SECURITY SERVICES, INC	Land Mobile Transmission Tower	2791321
5,020	NEW YORK CITY TRANSIT AUTHORITY	Land Mobile Transmission Tower	1917117
5,024	910 CAR SERVICE INC	Land Mobile Transmission Tower	1625837
5,024	910 CAR SERVICE INC	Land Mobile Transmission Tower	1625837
5,175	TOURO COLLEGE	Land Mobile Transmission Tower	3126443
5,175	TOURO COLLEGE	Land Mobile Transmission Tower	3216119
5,180	BAYRIDGE & BENSONHURST BEAUTIFICATION AND PRESERVATION ALLIANCE INC	Land Mobile Transmission Tower	2459921
5,180	BAYRIDGE & BENSONHURST BEAUTIFICATION AND PRESERVATION ALLIANCE INC	Land Mobile Transmission Tower	2459921
5,271	SERVICIOS DE CHOFERES INC DBA MONCHITO CAR SERVICE	Land Mobile Transmission Tower	1663370

Cable crossings will typically require a physical separation between cables. For the submarine export cables, concrete mattresses or an exterior protection product will be installed between the cables. The Project will comply with applicable standards as they relate to power and communication cable spacing; therefore, the Project is not anticipated to impact communications systems associated with proximity to existing submarine or underground telecommunications cables. Details on the specific crossings will be included in the Environmental Management and Construction Plan. The onshore substation will be designed in accordance with industry standards to prevent communications interference. The Project is anticipated to have negligible impacts on communication systems, as detailed in the following sections. While the Project's interference with radio, television, or other communication systems is anticipated to be negligible, the Applicant will work to resolve any suspected or identified interference in the event that complaints are received during construction or operations.

#### **E-5.2.1 Radio and Television Interference**

Based on the design of the cables and the proposed onshore substation, the Project is not anticipated to be a source of radio or television interference. Radio and television interference is typically associated with overhead lines and corona-produced radio-noise. Corona interference occurs when the electrical field around a conductor, typically at high voltage, ionizes the air, resulting in a discharge of electricity. Raindrops, snow, fog, hoarfrost, and condensation accumulated on the conductor surface are also sources of surface irregularities that can increase corona. Radio-noise from a corona discharge is reduced with distance from the source. The submarine export and onshore cables will be installed underground or underwater and will be designed to reduce potential for corona discharge, including by incorporating cross-linked polyethylene insulation and shielding. As such, the Project facilities are not expected to be a source of radio-noise or television interference.

#### **E-5.2.2 Power Line Carrier Interference**

Power line carrier is a communication system used in overhead transmission lines, which transmits by modulation on a carrier signal. Power line carrier interference can occur from electrical transmission lines in the form of noise, which can be a concern for radio services. Since the Project's communication and protection signaling will use fiber optic cables rather than power line carrier, and because the proposed cables will be installed underwater and/or underground, this type of interference is not anticipated.

#### **E-5.2.3 Telephone Interference**

The EW 1 onshore export cables and onshore interconnection cables will be installed underground, so they are not anticipated to cause harmonic distortion sufficient to impact or interfere with existing telephone systems and mobile communications systems. The onshore substation will be designed to minimize the potential for harmonic distortion. The onshore substation design will incorporate measures to address potential telephone or mobile communication system interference and to ensure that local standards are maintained. Moreover, telephone cables are generally manufactured with shielded copper wire for the purpose of minimizing potential interference from transmission lines. Digital and fiber optic telephone communications are not known to be subject to transmission interference. As a result, the Project is not expected to cause any interference with telephone signals.

#### **E-5.2.4 Railway Signaling Interference**

Railway signaling interference can happen where there are railway communication facilities in the vicinity of proposed transmission lines. One railway crossing is located along the proposed onshore interconnection cable route within the SBMT parcel, where the New York New Jersey Rail provides rail service to SBMT. The



Applicant will use trenchless construction to cross the railroad tracks, and no impacts to railway signaling are anticipated. **Exhibit E-6** provides additional information on the railway crossing.

### **E-5.2.5 Microwave Interference**

Microwave communications use short wavelengths typically for line-of-sight point-to-point communications, as well as satellite communications, using directional antennas. As such, microwave interference typically would only occur if the interference source were located between two antennas. Because of the short wavelengths and high directionality, microwave communications are designed to be targeted and reduce potential for interference from other microwave systems. Microwave communication systems, or relays, also tend to be built in elevated locations to preserve line-of-sight. There are 124 microwave service towers within one mile of the submarine and onshore cable routes; however, because the proposed transmission line will be located entirely subsea or belowground, it is not expected to produce any microwave interference.

### **E-5.2.6 Proposed Mitigation**

The Project is not expected to result in any significant interference with radio, television, cellular phone reception, railway signaling and communications, or microwave transmissions. The Applicant will comply with applicable provisions of the National Electrical Safety Code related to proposed transmission lines and communication facilities and has designed the transmission lines to minimize corona effects.

The Applicant will follow the Call Before You Dig protocol and contact potential third-party underground communication cable operators to confirm the locations of any underground communication facilities that would be within or crossed by the right-of-way. If underground communication facilities that have not been previously identified are found within the vicinity of the Project, Applicant would ensure that appropriate clearances and interference protection are verified.

### **E-5.3 References**

FCC (Federal Communications Commission). 2018a. "FM Transmission Towers." Accessed February 10, 2020. <https://hifld-geoplatform.opendata.arcgis.com/datasets/fm-transmission-towers>.

FCC. 2018b. "Microwave Service Towers." Accessed February 10, 2020. <https://hifld-geoplatform.opendata.arcgis.com/datasets/microwave-service-towers>.

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FCC. 2018e. "Land Mobile Private Transmission Towers." Accessed February 10, 2020. <https://hifld-geoplatform.opendata.arcgis.com/datasets/land-mobile-private-transmission-towers>.

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FCC. 2018g. "Land Mobile Broadcast Towers." Accessed February 10, 2020. <https://hifld-geoplatform.opendata.arcgis.com/datasets/land-mobile-broadcast-towers>.

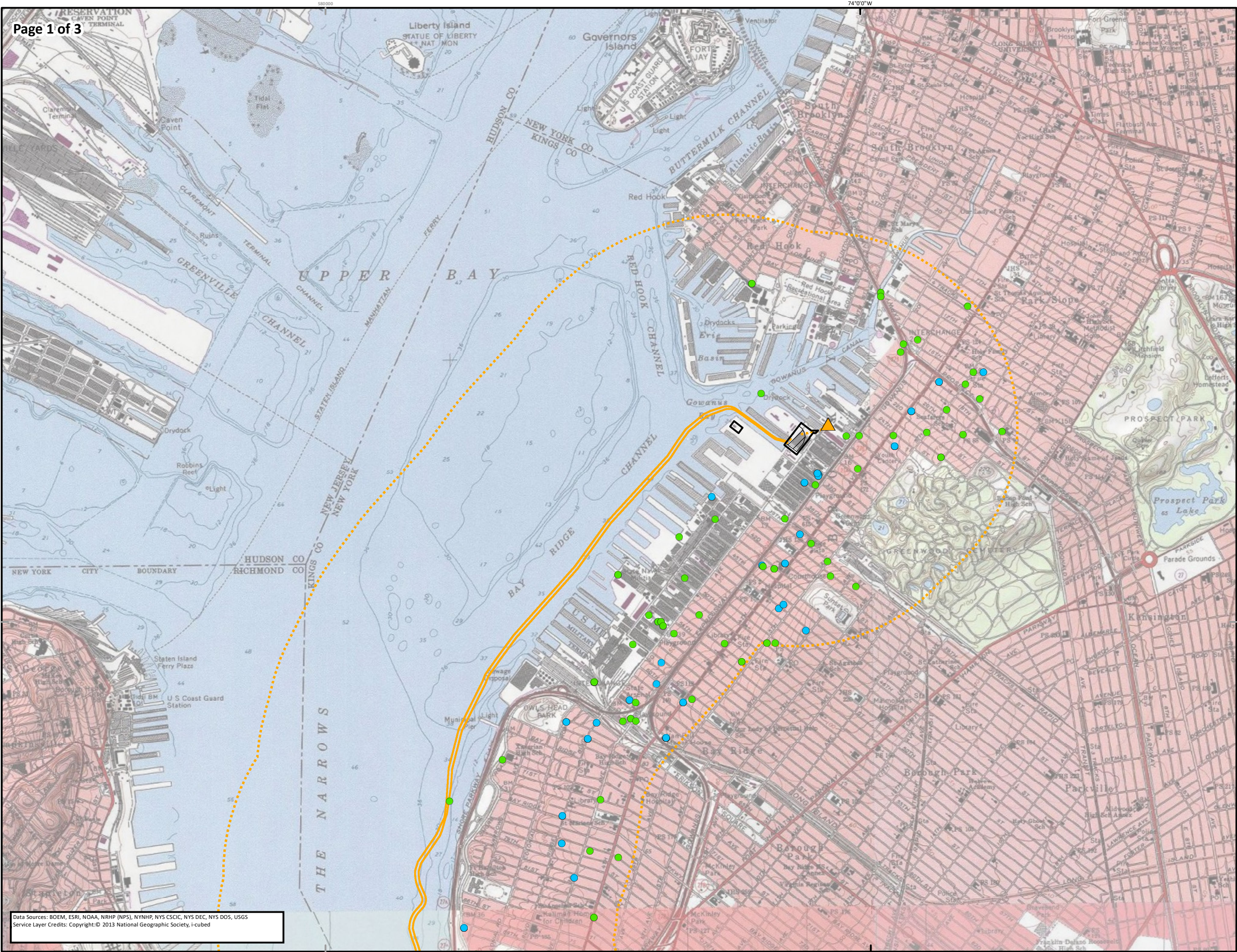
FCC. 2018h. "TV Analog Station Transmitters." Accessed February 10, 2020. <https://hifld-geoplatform.opendata.arcgis.com/datasets/tv-analog-station-transmitters>.



FCC. 2018i. “TV Digital Station Transmitters.” Accessed February 10, 2020. <https://hifld-geoplatform.opendata.arcgis.com/datasets/tv-digital-station-transmitters>.

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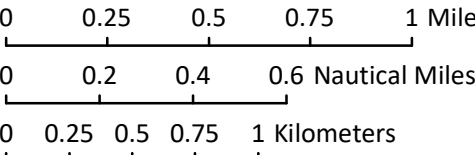
Data Sources: BOEM, ESRI, NOAA, NRHP (NPS), NYNHP, NYS CSCIC, NYS DEC, NYS DOS, USGS  
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# EMPIRE OFFSHORE WIND EMPIRE WIND 1 PROJECT

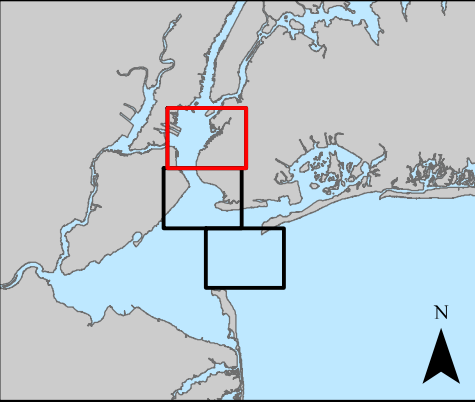


- ▲ POI
- Land Mobile Transmission Tower
- Microwave Service Tower
- Interconnection Cable Route
- Submarine Export Cable Route
- ▨ Onshore Substation
- ▭ Onshore Substation Workspace
- 1-mile Buffer

Date	5/13/2021
File/Job Number	194-1247-0001
Personnel	Figure Prepared by: Tetra Tech Offshore GIS



## REFERENCE MAP







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## EMPIRE OFFSHORE WIND EMPIRE WIND 1 PROJECT



- Land Mobile Transmission Tower
- Microwave Service Tower
- Submarine Export Cable Route
- 1-mile Buffer

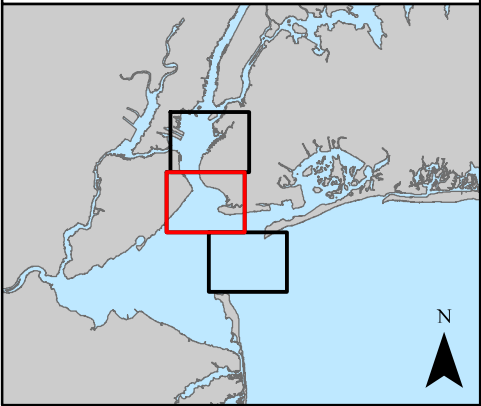
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File/Job Number	194-1247-0001
Personnel	Figure Prepared by: Tetra Tech Offshore GIS

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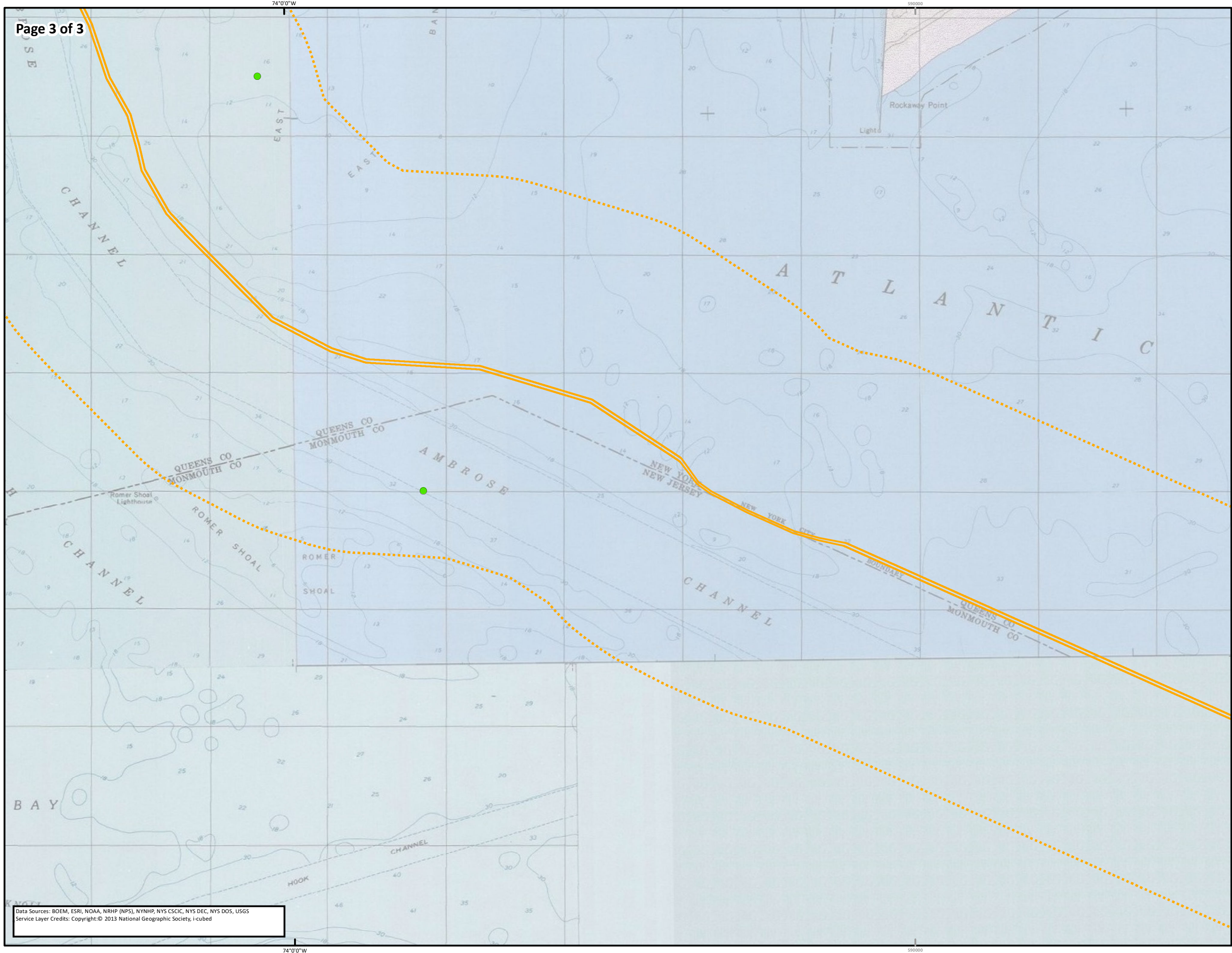
0 0.2 0.4 0.6 Nautical Miles

0 0.25 0.5 0.75 1 Kilometers

### REFERENCE MAP







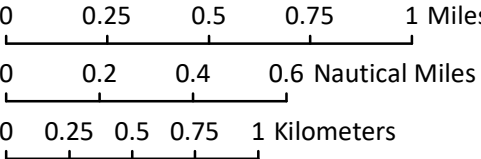
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EMPIRE OFFSHORE WIND  
EMPIRE WIND 1 PROJECT



- Land Mobile Transmission Tower
- Submarine Export Cable Route
- - - 1-mile Buffer

Date	5/13/2021
File/Job Number	194-1247-0001
Personnel	Figure Prepared by: Tetra Tech Offshore GIS



REFERENCE MAP

