

Empire Offshore Wind LLC

Empire Wind 2 Project
Article VII Application

Exhibit 6
Economic Effects of Proposed Facility

June 2022

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ACRONYMS AND ABBREVIATIONS

BOEM	Bureau of Ocean Energy Management
Empire or the Applicant	Empire Offshore Wind LLC
EW 2	Empire Wind 2
HVAC	high-voltage alternating-current
km	kilometer
kV	kilovolt
Lease Area	BOEM-designated Renewable Energy Lease Area OCS-A 0512
LIPA	Long Island Power Authority
LIRR	Long Island Rail Road
mi	mile
nm	nautical mile
NYCRR	New York Codes, Rules and Regulations
NYISO	New York Independent System Operator, Inc.
NY Project	EW 2 Project transmission facilities in New York
NY Project Area	Area that includes components of the NY Project within the borders of New York State, including submarine export cable corridor, onshore export cable corridor, interconnection cable corridor and onshore substation.
NYSERDA	New York State Energy Research and Development Authority
NYSPSC or Commission	New York State Public Service Commission
POI	Point of Interconnection at an expansion of the Barrett 138-kV Substation
PSEG-LI	PSEG Long Island
PSL	New York Public Service Law

EXHIBIT 6: ECONOMIC EFFECTS OF PROPOSED FACILITY

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 requirements of 16 New York Codes, Rules and Regulations (NYCRR) §86.7: Economic Effects of Proposed Facility and describes anticipated effects the construction and operation of the proposed facility may induce in the residential, commercial, or industrial land-use patterns of adjacent areas (i.e., economic effects).

6.2 Existing Demographics/Economic Conditions

The local economy and demographics (e.g., population, employment rates, and local economic conditions) are the significant factors that affect residential, commercial, and industrial land-use patterns. As noted above, the NY Project’s onshore facilities, including the onshore export and interconnection cable routes, onshore substation, and POI, are entirely within Nassau County, New York. Nassau County is located in the western portion of Long Island and contains two cities and three towns. Within the three towns, there are 64 incorporated villages and over 100 unincorporated areas (Nassau County, n.d.). In the State of New York, counties are divided into cities or towns, with the towns being major subdivisions that may contain multiple incorporated villages. These incorporated villages are clearly defined areas with their own governing bodies (New York State, n.d.). **Table 6.2-1** below illustrates the local demographics of Nassau County in comparison to New York State.

Table 6.2-1 Existing Economic Conditions in Nassau County and New York State

State/ County	Total Population a/	Population Density (persons per square mile) a/	Per Capita Income	Median Non- Family Income	Civilian Labor Force	Unemployment Rate	Top Three Industries b/
New York State	19,572,319	411.2	\$39,326	\$68,486	10,045,829	5.5%	E, P, R
Nassau County	1,356,509	4,704.8	\$51,422	\$52,177	715,543	3.9%	E, P, F
Hempstead	767,417	6,406.1	\$44,958	\$50,416	408,113	4.2%	E, P, R
Village of Island Park	4,835	10,979.8	\$40,304	\$75,731	2,845	2.5%	E, A, F
City of Long Beach	33,507	15,022.6	\$53,579	\$65,242	19,432	4.4%	E, P, F

Notes:

a/ 2019 5-year estimates

b/ A = Arts, entertainment, and recreation, and accommodation and food services; E = educational services, and health care and social assistance; F = Finance and insurance, and real estate and rental and leasing; P = professional, scientific, and management, and administrative and waste management services; R = retail trade.

Sources: U.S. Census Bureau QuickFacts New York 2018; American Community Survey 2019, 2015-2019 American Community Survey 5-Year Estimates

6.3 Construction Effects

No significant land use changes are expected to occur from the construction of the NY Project. The onshore substation will be constructed on an existing developed parcel in an area of existing commercial land use. The onshore export and interconnection cable routes are located predominantly within existing roadway and railroad rights-of-way.

The NY Project will positively affect the local economy by increasing employment and earnings in the construction industry. Hundreds of jobs will be created for Project construction activities in New York, including installation of the onshore export and interconnection cables, construction of the onshore substation, and installation of the portion of the submarine export cable within New York State waters. These construction jobs will be created through direct employment by the Applicant and by its direct suppliers and contractors. Many of these construction jobs are anticipated to be located in the vicinity of the onshore export and interconnection cables route in Nassau County. Local workers and local suppliers and contractors will be used to the maximum extent practicable; however, the precise number is uncertain at this time.

A portion of the newly created jobs will likely be filled with the local workforce. The Applicant has made a commitment to work with local unions and to ensure that job opportunities and development programs created through the NY Project are marketed to local job seekers and serve low-income residents. Construction-related jobs will be temporary during the construction period. However, the specific skills and experience gained would be applicable to other offshore wind farm projects as these projects enter the construction phase. In addition, the Applicant has agreed to make workforce and partnership commitments to maximize the impact of its investments and presence in New York throughout all phases the NY Project.

It is anticipated that there will be a slight influx in workers relocating to the area surrounding the NY Project. The increase in workforce will likely result in an increased demand for temporary housing for workers and their families, causing a decrease in vacancy rate. Generally, the housing vacancy rate in the area surrounding the NY Project is lower than the state average, with the exception of the City of Long Beach (American Community Survey 2019). This is likely due to the higher seasonal, recreational, or occasional use of housing units. Median value and median rent are also higher than the state average. The Applicant anticipates that construction workers will find temporary housing throughout the western Long Island area and surrounding region, not just within the communities crossed by the NY Project, given the NY Project's close proximity to mass transit options and/or major highway corridors. As such, the anticipated increase in relocated workers is unlikely to be greater than the available number of temporary housing units and is not expected to create a shortage or create a noticeable disruption in the local housing market.

The influx of workers will likely result in an increased demand for public services, including police and fire services. However, relative to the dense population and availability of public services in the area, the NY Project will introduce a relatively small additional workforce that is expected to be housed throughout the west-central Long Island region. The NY Project is not disproportionate in size to other construction projects occurring throughout the county and is anticipated to have much less impact on services than seasonal tourism to the area. As such, there is expected to be sufficient capacity in the numerous hospitals, fire departments, law enforcement personnel, and public schools in the vicinity of the NY Project and in the larger Nassau County area, so the NY Project will not impact the availability of public services.

Construction activities are expected to directly result in an increase in local spending on construction and other materials, and the new construction workers are expected to spend some of their payroll in the local area, increasing the overall demand for local goods and services. These local expenditures and wages would temporarily increase local income and sales taxes.

6.3.1 Construction Schedule

Project construction is anticipated to occur over a period of approximately three years. Pending receipt of all required permits and authorizations, NY Project construction is expected to begin in 2024 and be completed in 2027. The Applicant anticipates construction will begin with onshore construction activities, including onshore site preparation, construction of the onshore substation, and installation of onshore export and interconnection cables; however, construction schedules are subject to various factors, such as state and federal permitting, financial investment decisions, power purchase contracts, and supply chain considerations. The sequence of construction activities will be determined following the Applicant's selection of construction contractors, and a construction schedule will be provided as part of the Project's Environmental Management and Construction Plan.

6.3.2 Mitigation of Construction Effects

Given the density of the local area and availability of housing throughout the New York metropolitan and Long Island area, the workforce size for NY Project construction is not anticipated to result in significant changes in local residential, commercial, or industrial land use or socioeconomic patterns; therefore, NY Project-related construction employment and income will not require any mitigation. Moreover, because this is new construction, no temporary impacts to existing electricity service, such as planned outages, will be needed except what may be required for final interconnection.

6.4 Operational Effects and Mitigation

The NY Project will not result in significant long-term changes affecting existing residential, commercial, or industrial land use patterns in the vicinity. The submarine export cables will be located entirely underwater and buried to the extent practicable. The onshore export and interconnection cables will be located predominantly underground and along existing roadway and railroad rights-of-way. A short portion of the interconnection cable route is proposed to cross Barnums Channel via an aboveground cable bridge; however, this portion of the interconnection cable route will parallel an existing bridge structure along the Long Island Rail Road (LIRR) and is not expected to represent a significant change or affect existing residential, commercial, or industrial land use patterns in the vicinity.

The cable landfall will be located in the City of Long Beach. Although the export cables will cross under Ocean Park Beach, this crossing will be located underground and installed with trenchless (horizontal directional drilling) methods. Work activities for the cable landfall are proposed to be located within areas of public road rights-of-way and private land. The cable landfall work areas will be restored to pre-construction conditions to the extent practicable following the completion of installation activities. Therefore, the cable landfall will not affect land use or recreation during operations.

The onshore substation would represent a long-term change in land use from commercial and recreational to industrial land uses and may result in some restriction of public access to the waterfront compared to its existing condition. Based on the relatively small area of land use change at the onshore substation site, this change is not expected to have an adverse effect on existing land uses in the vicinity or region in general. Empire will evaluate minimizing impacts to public access in the onshore substation design, as feasible. Section 4.10 of **Exhibit 4: Environmental Impact** assesses the NY Project relative to existing land use policies and regulations, as well as visual and other environmental resource impacts. Additional information on compliance with local zoning ordinances and any waivers requested is presented in **Exhibit 7: Local Ordinances**.

The NY Project is not anticipated to adversely impact visual or other environmental resources (see **Exhibit 4**) in a manner that would affect land use patterns. Land uses adjacent to the NY Project will remain unchanged following construction and during operation, and the NY Project is not anticipated to affect future real estate development.

To the extent that the NY Project provides renewable energy generation, reduces electric power production costs and associated air emissions, the NY Project will support existing land uses and could encourage future economic development in the region.

The Applicant does not anticipate the creation of operations jobs dedicated specifically to the maintenance and operation of the NY Project; however, some employment will be created for the operation and maintenance of the EW 2 Project electrical systems as a whole, covering New York State and offshore facilities in federal waters, including at the operations and maintenance base for the offshore wind farm. For example, a 2018 report from E2 estimated that a 352-megawatt wind farm would directly generate 75 jobs in New York in the operations

phase (E2 2018). The estimate provided in the E2 study is based on a wind farm size that is smaller than the proposed EW 2 Project. Operations and maintenance jobs for the EW 2 Project will be predominantly located out of the Applicant's Operations and Maintenance Base, which will be located at the South Brooklyn Marine Terminal, in Brooklyn, New York.

Since the NY Project is not anticipated to result in any significant changes in land use in the vicinity of the NY Project, no mitigation will be required.

6.5 Commercial Fishing

Construction and operation of the offshore components of the NY Project (the submarine export cables within New York State waters) are expected to have little to no economic effect on commercial fishing or commercial fishermen, including consideration of both the potential positive and the potential negative effects of the NY Project. During cable route surveys for the past four years, Empire's Fisheries Liaisons have worked to identify and conduct outreach with all of the NY Project Area's active commercial fishermen. As part of this effort, the Applicant's Fisheries Liaisons have consulted the New York State Department of Environmental Conservation's marine fisheries staff, obtained lists of New York fishing license holders, and distributed survey notices and NY Project information to all fishermen who agreed to receive communications. The Applicant has documented approximately 2,000 contacts with fishermen and fishery agencies from within the Mid-Atlantic and southern New England region, with a focus on those who travel or fish in or near the Empire Wind Lease Area and submarine export cable routes. These contacts include individual and group meetings, conferences, telephone conversations, emails, and text messages. The information gathered has been used throughout the planning for the NY Project.

To support safe navigation through and fishing within the NY Project Area during construction operations and to minimize interactions with the commercial and recreational fishing industries, the Applicant has developed specific stakeholder communications measures in its Fisheries Communications Plan¹ and its Public Involvement Plan (**Appendix B**).

The Applicant's outreach, research and discussions with commercial fishermen indicate that in recent years the NY Project Area has not been heavily fished. Fishing in this area includes fixed-gear, primarily pot/trap for blackfish (tautog), black sea bass, crabs and conch/whelks. There is also some gillnetting. However, much of the pot/trap fishing is concentrated to the west of the submarine export cable route. Fixed-gear is set on the bottom and is designed to capture target species for the duration of its "soak-time", until retrieved. Squid trawling and surfclam dredging is concentrated just outside of the submarine export cable route, with some activity overlapping into state waters along the 3 nm (5.6 km) state/federal boundary. There is also some seasonal inshore fishing for crabs with light dredges. Fishermen have indicated to the Project's Fisheries Liaison Officer that they no longer catch lobsters in New York State waters along the submarine export cable route, which is consistent with findings throughout the mid-Atlantic region, where lobster die-off and shell disease has been prevalent over the past few decades (Gomez-Chiarri and Cobb 2012). More than 100 survey days have been spent on the submarine export cable route, and no contact with fishing gear has occurred.

6.5.1 Potential Construction Effects on Commercial Fishing

Cable installation activities for the submarine export cables may overlap temporally and spatially with fishing activities. In the event of an overlap, it is possible that it will be necessary to ask fishermen to move their gear to other areas temporarily during cable installation and burial of the submarine export cables. To minimize

¹ Available online at: <https://www.empirewind.com/environment-and-sustainability/mariners-and-fisheries/>

potential fishing access impacts while ensuring safety, export cable installation activities will utilize a “rolling” construction safety zone along the submarine export cable route. As a result, submarine export cable installation impacts are anticipated to predominantly represent short-term impacts to fisheries where cable installation activities occur. Once cable installation in an area is complete, marine activities, including commercial and recreational fishing, will be able to resume.

Much of the commercial fishing effort in the region (otter trawling, squid trawling, scallop dredging, hydraulic clam dredging, etc.) is concentrated outside of the NY Project Area based on information obtained through direct outreach to commercial fishermen by the Project’s Fisheries Liaison Officer. This is further supported by the publicly available data, such as: Automatic Identification System, Vessel Monitoring System, Transit Counts, Vessel Trip Reports, as well as fishing vessel transit data supplied by the commercial fishing industry as part of the New York State sponsored Fisheries Transit Workshop in Port Jefferson, New York. This data indicates that, while variable, the level of fishing activity within the NY Project Area from recent years (approximately 2011 to 2016), is low. Therefore, with rolling safety zones to minimize the effect of potential displacement from fishing areas, the potential for economic impacts due to loss of access to grounds during installation of the submarine export cables is expected to be minimal.

As described in **Exhibit 4**, construction activities may result in localized, short-term impacts on fish and invertebrate resources, including: short-term physical disturbance of habitat, short-term exposure to underwater noise during construction activity, and short-term increase in turbidity and sediment deposition. The analysis of potential impacts supports the overall determination that construction activities associated with the NY Project would be unlikely to result in significant adverse impacts on demersal or pelagic life stages of fish or invertebrates. Because impacts on demersal and pelagic life stages of fish and invertebrates are likely to be short-term and localized, construction is not expected to affect managed fishery stocks or populations, and therefore is not expected to result in economic impacts.

6.5.2 Potential Operational Effects on Commercial Fishing

The presence of project-related submarine export cables during operations will not restrict access to traditional fishing grounds along the submarine export cable route. The Applicant will determine through a Cable Burial Risk Assessment the appropriate target burial depth for submarine export cables, informed by engagement with regulators and stakeholders (including commercial fisheries stakeholders), extensive experience with submarine assets, and based on an assessment of seabed conditions and activity (including fishing) in the area. The target burial depth accounts for seabed mobility and the potential risk of interaction with external hazards such as fishing gear and vessel anchors, while also considering other factors such as existing navigational routes.

The submarine export cable siting corridor is engineered to minimize areas where burial might be hindered by seabed conditions including hard grounds, variable glacial tills, areas of steep slopes, and shallow or surficial hardbottom or ledge. However, in certain locations where target burial depth is not achieved, cable protection may be required. It is anticipated that cable protection will have minimal impact to the existing fisheries regime, as areas where the seabed dictates the need for cable protection are often near other known seabed obstructions (snags), and therefore are not likely trawled or dredged.

Should an area of surficial hardbottom or a subsea asset crossing necessitate external protection of the cables (e.g., crushed rock), that area of bottom could become a snag to trawling or dredging (i.e., due to the potential for gear hangs), and that area may be considered ground lost to mobile gear. Cable burial remediation techniques, when applied, will be designed to minimize the potential for gear snags, as feasible. In areas where concrete mattresses are essential, for example at asset crossings, they will be covered by another material (e.g,

crushed rock). Fixed gear fishing around such deployments would continue as normal or with the potential benefit of additional hardbottom seabed structure.

Based on the expected low levels of commercial fishing activity along the submarine export cable route and the continued access to fishing above subsea cables, the effects of the submarine export cables on commercial fishing operations are expected to be negligible. The introduction of hardbottom habitat may also have a positive impact in creating habitat for certain fish and invertebrate species (see **Exhibit 4**), although that positive impact is anticipated to be negligible in the context of managed fishery stocks or populations along the submarine export cable route, due to the relatively small area affected.

6.6 Impacts on Energy Supply and Additional Economic Benefits

The EW 2 Project is one of two projects selected by New York State in its Phase 2 Offshore Wind Renewable Energy Certificates solicitation, which was the largest single competitive renewable energy procurement in US history. Together, the two Phase 2 award projects (which include the EW 2 Project and the Beacon Wind 1 Project) will provide approximately 2,490 megawatts of offshore wind energy to New York State, enough to power more than 1.3 million New York homes (NYSERDA 2022). Under the NYSPSC Clean Energy Standard adopted in 2016, 50 percent of New York State's electricity must come from renewable sources of energy by 2030, with 2.4 gigawatts of electricity generated by offshore wind. Additionally, the Climate Leadership and Community Protection Act, passed in July 2019, requires 70 percent of New York's electricity to come from renewable sources by 2030 and 100 percent to be renewable by 2040, including 9 gigawatts of electricity from offshore wind by 2035. The EW 2 Project will advance New York State towards meeting these milestones, will contribute to the diversification of New York's energy portfolio, and will reduce greenhouse gas emissions.

The EW 2 Project will provide economic benefits to New York and the local Nassau County area through job creation (direct, indirect, and induced), infrastructure investment, supply chain development, benefits to ratepayers, and cost savings through emissions reductions. Together, the two Phase 2 award projects, including the EW 2 Project, are estimated to create more than 5,200 direct jobs and provide a combined economic benefit to New York of \$8.9 billion to upstate, downstate and Long Island, New York (NYSERDA 2022) in labor, supplies, development, and manufacturing statewide. They are expected to provide more than \$644 million in investments in long-term port facilities and related infrastructure, and bring \$47 million in workforce development training, innovation and community benefits (NYSERDA 2022). The projects also committed to nearly \$25 million to support regional monitoring of wildlife and key commercial fish stocks (NYSERDA 2022).

The development of the EW 2 Project will confer additional economic benefits on New York by reducing electric power production costs and associated air emissions, which will provide additional value to New York ratepayers. Production cost and emissions reduction benefits are expected to result from reducing reliance on thermal energy generation. The New York State Offshore Wind Master Plan (NYSERDA 2017) estimates that the development of 2,400 megawatts of offshore wind energy would annually reduce greenhouse gas emissions in New York State by more than five million short tons, which is the equivalent of removing nearly one million cars from the road by 2030. Reducing emissions such as ozone and particulate matter will also improve air quality (NYSERDA 2017). The two Phase 2 award projects are expected to deliver a combined value of approximately \$1 billion in avoided health impact benefits (NYSERDA 2022), due to avoided hospitalization and premature deaths associated with asthma and respiratory and cardiovascular diseases.

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