Horizon Wind Power LLC

Unsolicited Application for a Renewable Energy Commercial Lease on the Outer Continental Shelf under section 585.230.

Lease Application for Project Penelope

Submitted By: Horizon Wind Power LLC, One World Trade Center, 85th Fl, New York

Date: May 23, 2018

May 23, 2018

Mr. Luke Feinberg
U.S. Department of the Interior
Bureau of Ocean Energy Management
45600 Woodland Rd
Sterling, Virginia 20166

Dear Mr. Feinberg,

Horizon Wind Power LLC is pleased to submit this unsolicited Section 585 Commercial Lease application for a wind site located 21 nautical miles from the proposed point of interconnection off the Southern Coast of New York. Horizon wishes to lease the area described in section 2.0 *(Lease Area)* for the purpose of developing an offshore wind farm, which will be connected via an undersea high voltage alternating current cable into New York's electrical grid. See section 2.1 *(Project Penelope)*.

Notable highlights of this application include:

- A New York based development team with a long history of completing wind energy projects in New York and the surrounding regions.
- A project that has been carefully vetted over a three-year period with various federal, state, and local stakeholders engaged to ensure the maximum likelihood of success.
- A project with the capability to power up to 35,000 homes, in addition to a significant carbon offset of approximately 156,000 – 300,000 metric tons per year.
- The benefit to New York State as this is a major first-step in meeting the renewable objective of sourcing 50% of New York State's energy from renewable sources by 2030.
- Local and national connections to the government including past and present representatives that have a keen interest in helping Horizon provide a cleaner alternative to current electric grid power sources.
- Economic and educational development opportunities through utilization of the local supply chain, local employment, educational and research programs, taxes and community benefit payments.

This project is best suited to proceed under current Federal and State incentives and is subject to change if the acceptance of this application is delayed.

Please do not hesitate to contact me with additional questions or comments.

Sincerely,

Ross Thomas
Chief Executive Officer
Horizon Wind Power LLC

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ABBREVIATIONS & ACRONYMS

ACHP Advisory Council on Historic Preservation

BOEM Bureau of Ocean Energy Management

BSEE Bureau of Safety and Environmental Enforcement

CEQ Council on Environmental Quality

CES Clean Energy Standard

COD Commercial Operation Date

COP Construction & Operation Plan

CZMA Coastal Zone Management Act

DOD Department of Defense

DPS Department of Public Service

ESA Endangered Species Act

EPA Environmental Protection Agency

EA Environmental Assessment

EPCI Engineering, Procurement, Construction & Installation

FAA Federal Aviation Administration

FONSI Finding of No Significant Impact

GIS Geographic Information System

HVDC High-Voltage Direct Current

HWP Horizon Wind Power

ITC Investment Tax Credit

ISO-NE Independent System Operator New England

LCOE Levelized Cost of Energy

LIPA Long Island Power Authority

MWh Megawatt hour

NARW North American Right Whale

NM Nautical Mile

NMFS National Marine Fisheries Service

NOA Notice of Availability

NOAA National Oceanic and Atmospheric Administration

NPS National Park Service

NREL National Renewable Energy Laboratory

NYISO New York Independent System Operator

NYPA New York Power Authority

NYSDEC New York State Department of Environmental Conservation

NYSERDA New York State Energy Research and Development Authority

OCS Outer Continental Shelf

OCSLA Outer Continental Shelf Lands Act

OFTO Offshore Transmission Owners

OPAREA Operating Area

POI Point of Interconnect

RFI Request for Information

SAP Site Assessment Plan

SHPO State Historic Preservation Office

SOC Standard Operating Conditions

SPUE Sighting Per Unit Effort

TSO Transmission System Operator

TSS Traffic Separation Scheme

USACE United States Army Corps of Engineers

USCG United States Coast Guard

USFWS United States Fish and Wildlife Service

WEA Wind Energy Area

WTG Wind Turbine Generator

1.0 Introduction

New York State recently committed an ambitious target to procure 50% of its energy from renewable resources, including offshore wind power, by 2030.

With significant energy resources and potential, estimates place the total developable resource of wind at more than 25,000 MW of onshore potential and more than 38,000 MW of offshore potential. If fully developed, this resource could provide more than 1.6 million GWh/year of electrical supply, more than 8 times greater than New York's projected electric consumption, by 2030.[1]

As part of our wind resource analysis, Horizon Wind Power found that New York offers several advantages for the development of offshore wind including: an enhanced geographic resource due to strong winds coming in from the Atlantic, general political support for renewables, high energy prices, and a high consumer demand for clean energy resources. To put this into perspective, nearly 7,800 megawatts of generating capability in New York is produced in plants that are greater than 50 years old, and that number is projected to increase to 17,900 megawatts by 2025. As the decommissioning of these less efficient power plants begins, the door is opening for renewable alternatives such as offshore wind.

Offshore wind turbines have several benefits, when compared to other renewable energy sources such as solar panels and onshore turbines, as the strong ocean breezes produce a steadier power output. The technology has been proven in Europe, where offshore wind sites as large as 300 turbines are being developed. Over the last decade, offshore wind turbines have become big business in Europe with companies like Siemens and Vistas capitalizing on favorable incentives and economies of scale. US companies are in prime position to take advantage of this shift, and we believe the timing for offshore wind projects in the US could not be better.

While the United States has led the way with onshore wind development, no offshore wind sites had been built until late 2016 when Deep Water Wind completed a 30MW wind site off the coast of Block Island, RI. This project marks the start of a new industry – one that could be worth billions of dollars in addition to making a huge contribution to reducing the United States' climate-changing pollution.

Project Penelope

Horizon Wind Power is proposing an innovative new approach to meet the growing energy needs on Long Island's South Shore with an offshore wind site encompassing cutting edge technology in addition to a new battery energy storage system. In response to PSEG and Long Island's request for reliable and renewable energy resources to serve the South Shore of Long Island, Horizon Wind Power is proposing a 60-120MW, 10-15 turbine offshore wind site, including an offshore substation. The site has been specifically selected for its proximity to existing onshore substations, strategic interconnection to the grid, and optimal wind speeds of 9-9.5 meters per second. The careful selection of potential wind sites is a critical aspect of the overall wind site development process.

The wind site, aptly named *'Penelope'*, would operate for a period of 25 years after which the turbines would either be decommissioned or the life of the wind site would be extended by a further application for consent. We plan to position the wind site 21 nautical miles off the South Shore of Long Island.

[1] https://www.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind

1.1 Key Objectives

- Develop a wind energy site capable of producing enough power to assist the energy needs of New York State, reduce its reliance on fossil fuels, and benefit local utilities by making their systems more efficient and reliable with respect to energy production and distribution across Long Island.
- Ensure the project is completed within the time constraints provided by the current US Federal Tax Code Incentives which were specifically designed for this type of energy project.
- Boost the local economy through job creation and training.
- Bring community members and civic leaders together to affect change within the current energy infrastructure.
- Minimize the projects impact on the environment.
- Ensure the project is economically viable.

1.2 Job Creation

Project Penelope will create employment opportunities associated with the fabrication, assembly, construction, installation, O&M and future decommissioning aspects of the project. As a result of the infrastructural requirements associated with the sheer size of equipment and complexity of installation, operation and maintenance activities for offshore wind can bring significant wind-related jobs and economic activity to New York State and its surrounding regions. Developing an offshore wind industry will increase the State's competitiveness in the clean energy sector, revitalize industrial ports, boost the manufacturing sector, and create a demand for skilled labor.[2]

1.3 Supply Chain

There is tremendous potential for this project to have a tangible and positive impact on the existing indigenous supply chain and businesses active in the offshore wind sector. These include, fabricators, parts supply and vessel/truck/plant operators. Supply chain activities including suppliers, activities/tasks/deliverables, and timeframes will be disclosed at a later date. Horizon Wind Power anticipates the majority of supply chain activities will be performed in the United States.

[2] Blueprint for New York State Offshore Wind Master Plan

2.0 Proposed Lease Area

Project Penelope is a 60-120MW, 10-15 turbine wind site including an offshore substation. The location has been selected specifically for its proximity to existing onshore substations, strategic interconnection to the grid, and optimal wind speeds of 9-9.5 meters per second.

The lease area is located 21.61 nautical miles from Southampton, NY. From its western edge, the area extends approximately 9 nautical miles east at its longest portion and consists of 39 Aliquot-blocks listed below (Table 2.1). The entire area is approximately 12,902 acres, or 5,221 hectares.

Point Number	Latitude	Longitude
1.	40.5626694	-072.0770361
2.	40.6289250	-071.9086389
3.	40.6408306	-071.9194278
4.	40.5744222	-072.0883167

Table 2.0: Latitude and Longitude; Project Penelope

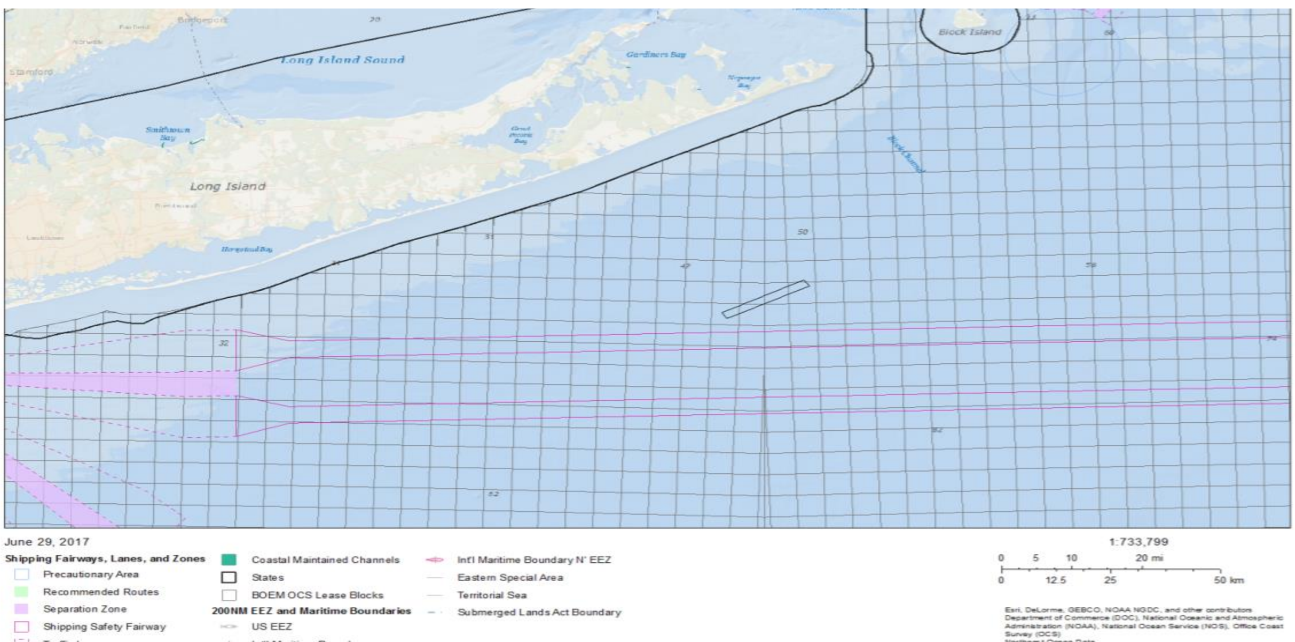


Figure 2.0: Aerial view of proposed lease area

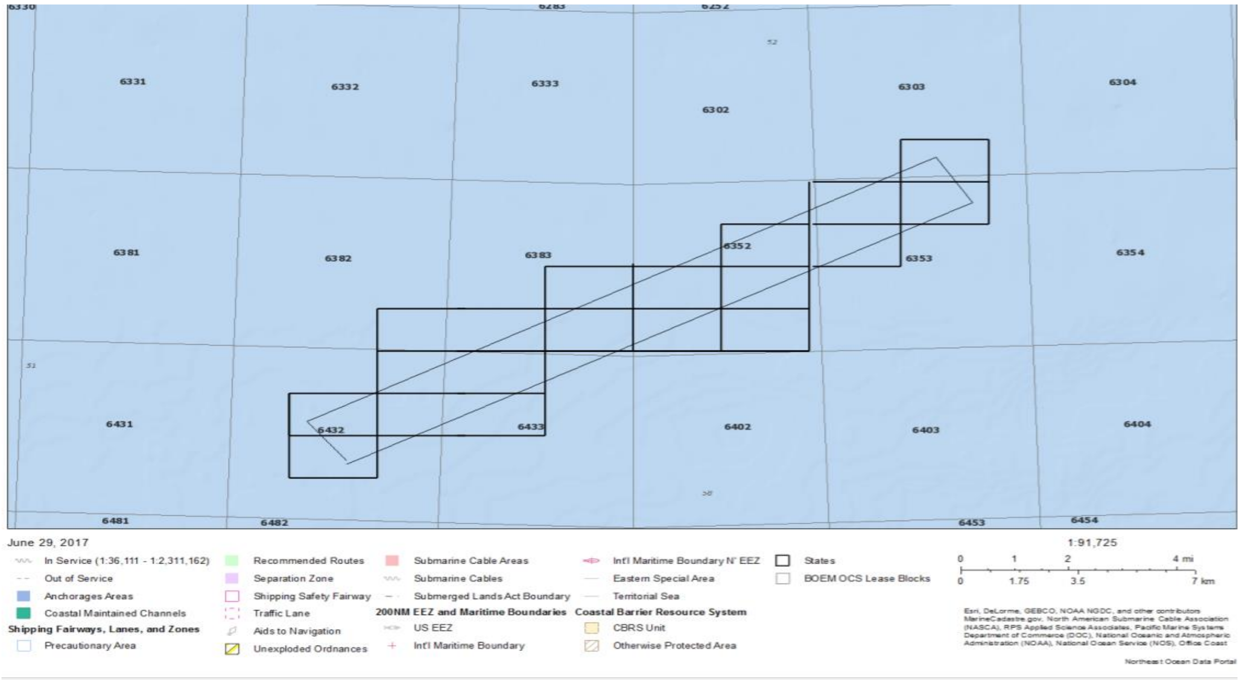


Figure 2.1: Proposed lease blocks

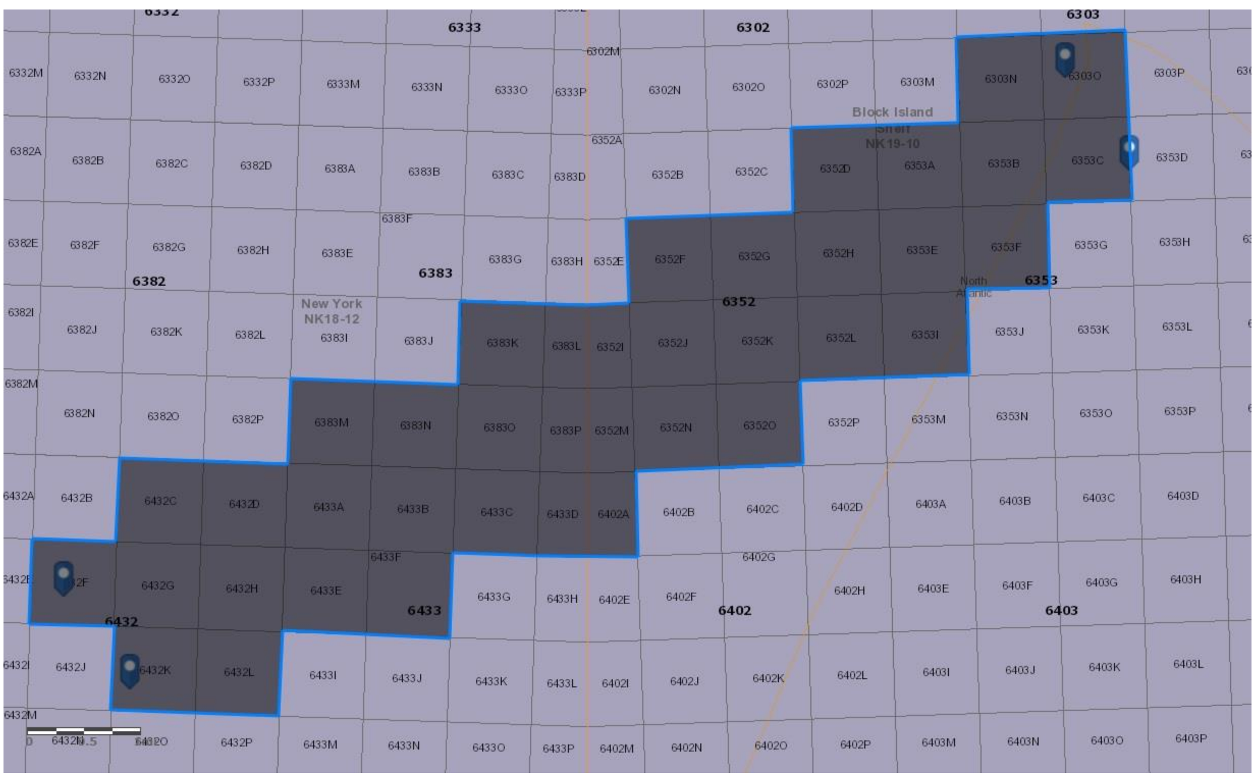


Figure 2.2: Proposed Lease blocks

Lease Blocks	ID	Aliquot Parts
1	6432	C,D,F,G,H,K,L
2	6433	A,B,C,D,E,F
3	6383	K,L,M,N,O,P
4	6402	A
5	6352	D,F,G,H,I,J,K,L,M,N,O
6	6353	A,B,C,E,F,I
7	6303	N,O

Table 2.1: Proposed Lease blocks

2.1 Visibility from Land

The potential landscape and visual effects of this proposed wind site are key issues for future assessment. Visual effects of the site location are of the highest concern, and any visual impacts will be kept to a minimum. As such, Horizon Wind Power has specifically chosen a location as far away from land as possible. Red lights, similar to ones seen on tall buildings, may be seen on clear evenings.

The wind site would look to introduce and reinforce a strong, sculptural quality on the landscape, adding to the landscape's identity and atmosphere. The site would achieve a high degree of openness through maintaining suitable distances between turbines and dwellings, substantially avoiding the negative perceptions of densely massed sites that may pose overwhelmingly negative visual effects.

The proposed wind site would result in very subtle alteration of environmental attributes, which could quickly be recovered through rapid decommissioning and restoration. The site would be a positive, long-term, reversible addition to the local landscape. The proposed development would also preserve the choice for future generations to make as to whether or not it is economically and environmentally viable to continue with clean, renewable wind energy generation in this location.

2.2 Neighboring Lease Issuance

In December 2016 the U.S. Department of the Interior's Bureau of Ocean Energy Management (BOEM) concluded an online auction process selecting Stat Oil as the winner of a 79,350-acre ocean lease (OCS-A-0512). Stat Oil plans to power New York City and Long Island with wind power within the next 10 years. An Environmental assessment (EA) of this area was conducted and a finding of no significant impact (FONSI) was issued. Figure 1 outlines the lease area acquired by Stat Oil.

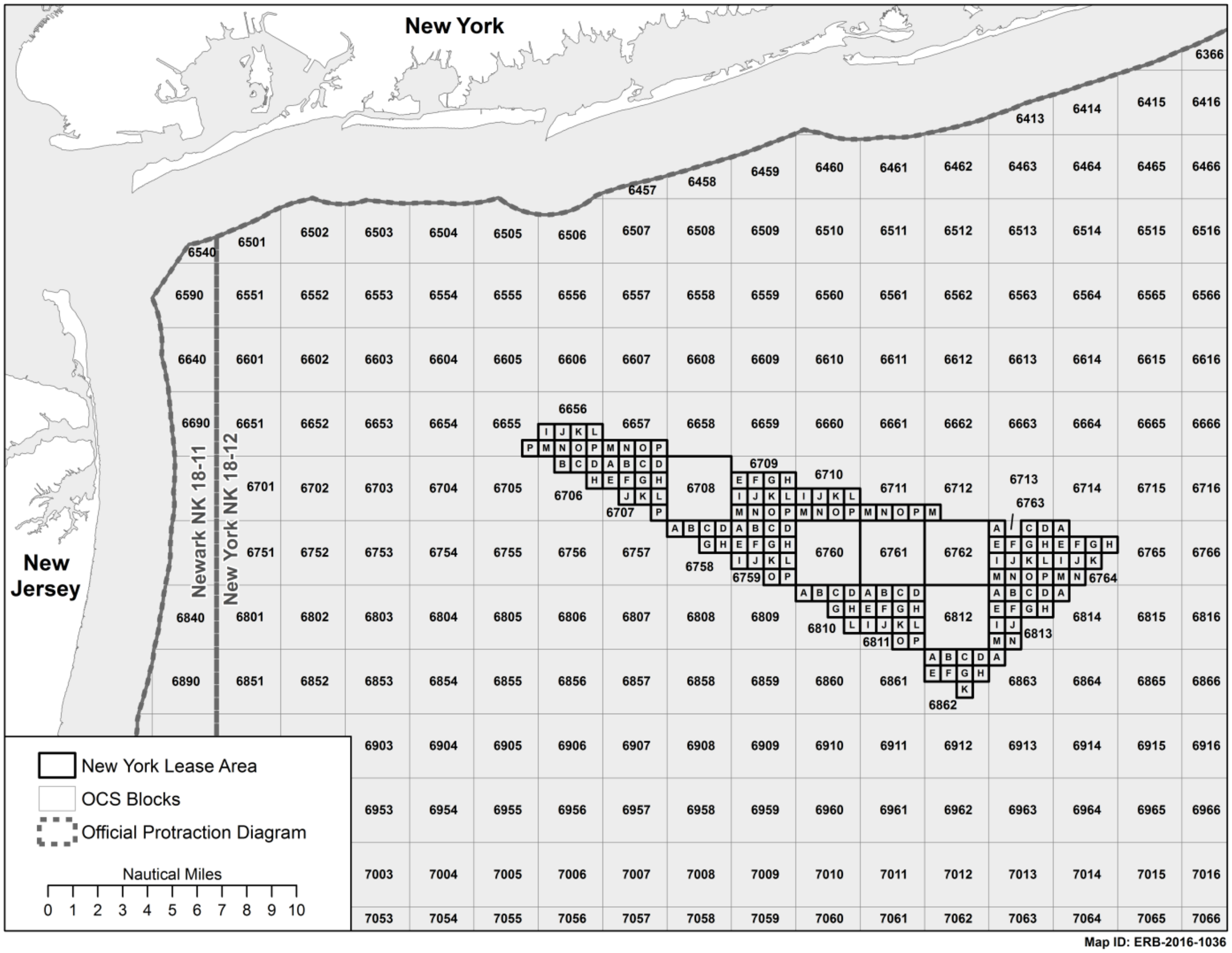


Figure 2.3 – Stat Oil Lease Area

2.3 Lease Area for Commercial Development

The lease site has been specifically picked for its proximity to existing onshore substations, strategic interconnection to the grid, and optimal wind speeds of 9-9.5 meters per second. The careful selection of the potential wind site is a critical aspect of the overall wind site development process. When choosing the potential wind site, we utilized a multi-phased approach through a combination of site visits, surveys, and the use of computer-based Geographical Information Systems (GIS) to identify relevant local/State/Federal designations and constraints. There was also a review of relevant planning policy through direct consultation with key statutory consultees, including local towns and state government representatives.

2.4 Technical and Operational Factors:

Horizon Wind Power assessed various wind sites over a three-year period. The below technical and operational factors were considered during this decision-making process:

- Sufficient wind resource - many areas having wind spends reaching 9.5 m/s *(Figure 2.0)*
- Acceptable depth for foundation installation
- Acceptable proximity to the grid and existing substations

- Acceptable proximity to shore to utilize high voltage alternating current technology
- No obvious fatal flaws with respect to environmental, community, transportation, and military interests.

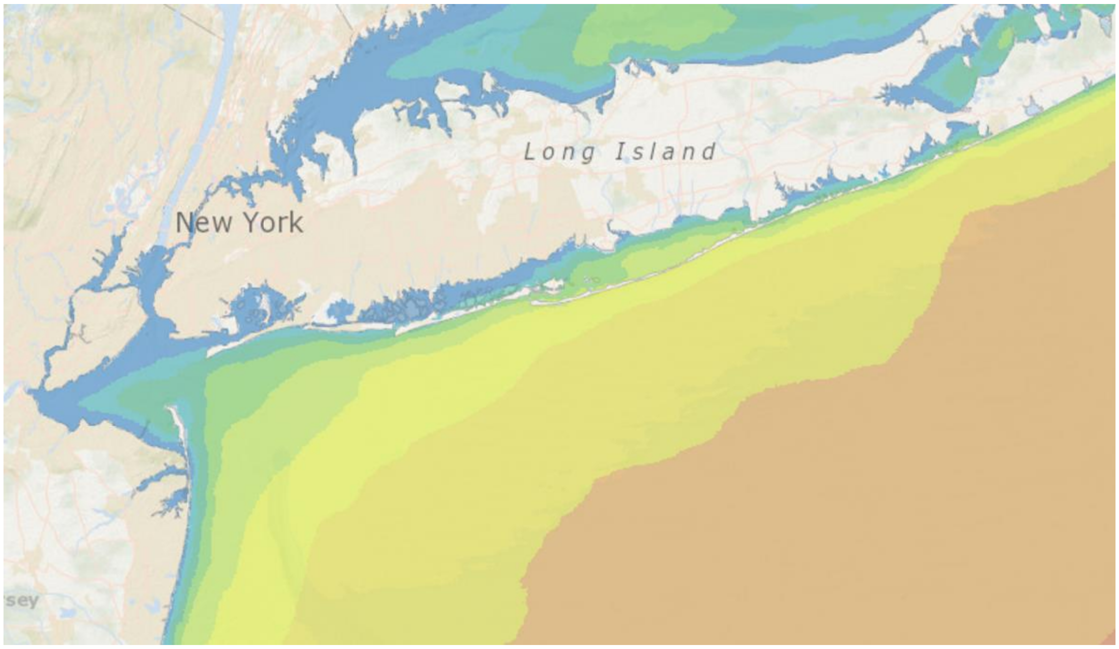


Figure 2.4 Average wind speed patterns off the South Coast of Long Island, NY.

2.5 Strategic Factors

The below strategic factors were considered during our preliminary site assessment:

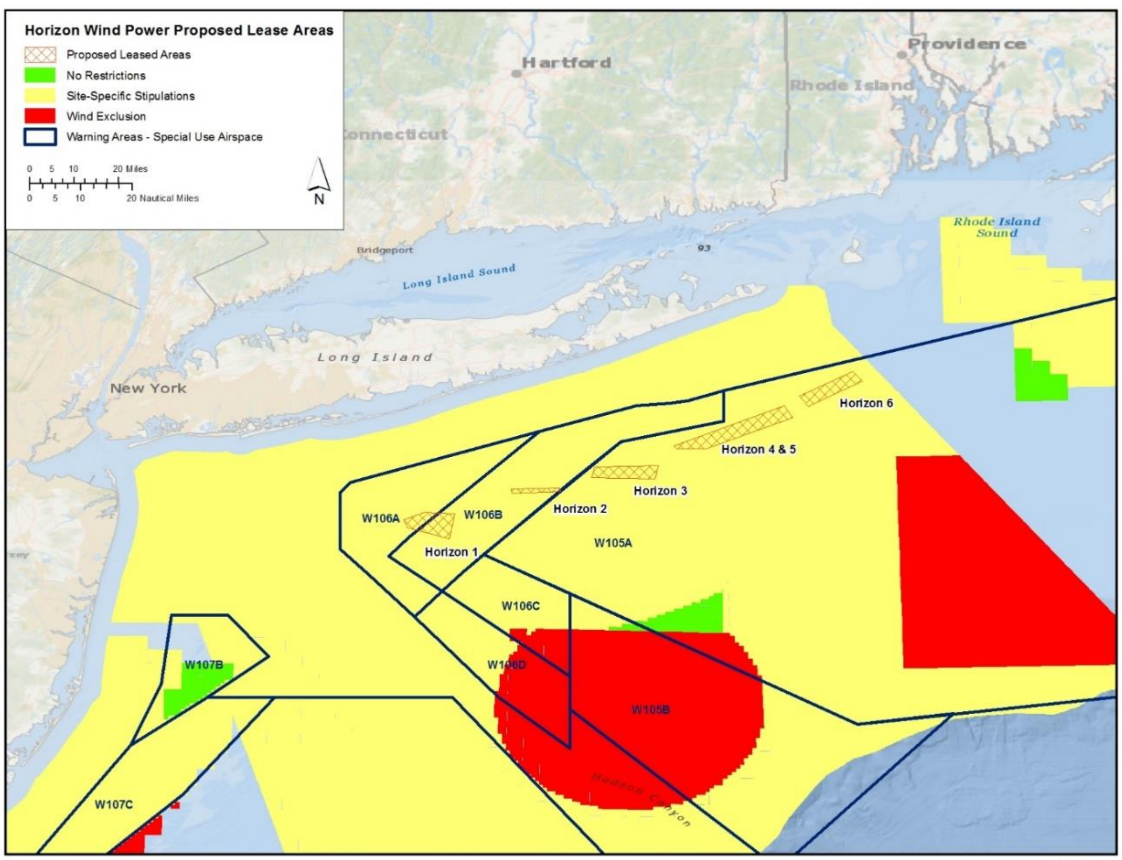
- Access to sheltered inshore deep-water areas for WTG assembly.
- Proximity to deep water navigation routes – once assembled, the WTG units are towed in an upright position to the proposed wind site. Therefore, the navigation route between the onshore assembly area and wind site must be of sufficient water depth to accommodate the unit's towing draft.
- Suitable seabed conditions – although the mooring system is not dependent of a specific type of anchor, and therefore has no strict requirements in terms of seabed conditions, an even seabed, with sufficient soil above bedrock is preferred for the ease of installation.
- Long Island has some of the highest power prices in the United States. This also includes high locational marginal pricing (LMP).
- A significant number of power plants/electrical facilities are due to retire in the wider region. This will create additional capacity for new, cleaner, more efficient power sources like wind.
- New York State has created a Clean Energy Standard (CES) which outlines an ambitious target of sourcing 50% of its energy from clean resources by 2030.
- An EA for lease OCS-A-0512 has already been conducted in the surrounding area of the site which we are targeting. A FONSI was concluded.

3.0 Stakeholder Engagement

With the guidance from the Bureau of Ocean Energy Management (BOEM), Horizon Wind Power has begun to engage key stakeholders for feedback on potential lease area development, and to discuss any immediate and overarching concerns. We agree with BOEM that early stakeholder coordination is a critical success factor for the project.

These stakeholders include but are not limited to: The National Oceanic and Atmospheric Administration (NOAA) with consultations from the Endangered Species Act (ESA), the National Environmental Policy Act (NEPA), and the National Park Service (NPS). Coordination with all relevant Military stakeholders has been established with both the Department of Defense (DoD) and The United States Army Corps of Engineers (USACE). We are also working closely with the United States Coast Guard (USCG) to ensure no disruption to shipping activity, shipping lanes, and/or frequently used routes will occur with the development of the proposed site.

During this process, Horizon Wind Power sent the Department of Defense (DoD) six potential wind sites. They informed us that the outlined sites, (figure 3.0), all lie within an area categorized as *site-specific stipulations* (yellow). This category means that the Department of Defense may ask BOEM for stipulations that would mitigate the impacts of a wind energy facility on DoD offshore training, testing, and operations. The exact stipulations, as the category name indicates, would depend on site specific details in addition to other variables such as the number and height of the turbines.



3/10/2017

Figure 3.0: Department of Defense Map

State level agencies in New York have also been engaged including the New York Department of Public Service (NYDPS), the New York State Department of Environmental Conservation (NYSDEC), and The New York State Energy Research and Development Authority (NYSERDA)

Additionally, the Sustainable Fisheries Division was engaged with respect to the areas off the Long Island Shore. They indicated that these areas are open to a variety of mobile gear (i.e., otter-trawls, mid-water trawls, purse seins, dredges), fixed gear (i.e., gillnets, lobster traps, fish traps), and fishing vessels which fish for squid, scallops, lobster, and ground fish in the area. The site locations of Project Penelope outlined by Horizon Wind Power do not overlap with any habitat protection areas or exempted fishing areas, where fishing activity may be more restrictive.

Horizon Wind Power plans to continue its close engagement with federal, state and local governments, as well other relevant stakeholders such as local residents, local industry leaders and environmental experts.

4.0 Technology & Infrastructure

Horizon Wind Power is proposing an innovative new approach to meet the growing energy needs on Long Island's South Shore with a wind site encompassing cutting edge technology as well as a new battery energy storage system. In response to PSEG and Long Island's request for reliable and renewable energy resources to serve the South Shore of Long Island, Horizon Wind Power is proposing a 60-120MW, 10-15 turbine offshore wind site, including an offshore substation, to supply capacity and renewable energy to the South Shore. We aim to explore a variety of options when choosing wind turbines. 6MW is our minimum requirement for each turbine since the larger units require less construction time, fewer locations and increased energy production. 6-12MW turbines have a capacity to supply up to 5-10,000 homes each. These factors will significantly reduce Levelized Cost of Electricity (LCOE) thus increasing financial viability.

It is important to note that wind turbine technology has enhanced rapidly with manufacturers introducing newer turbines with capacities of up to 12MW. We will actively explore these options if it makes financial and environmental sense.

4.1 Foundations

The foundation sections will be chosen and designed according to site conditions. Maximum wind speed, water depth, average wave height, current speed, and surf properties all affect the foundation type and design. The size and weight of the turbine and tower are also key components. Within a wind site, each foundation is customized to the water depth at its particular location. Four basic types of foundations have been used in offshore wind sites: monopiles, jackets, tripods, and gravity foundations. Each foundation type is prefabricated onshore in one piece, carried offshore by barge or other transportation vessel, launched at sea, and then anchored on the bottom by a crane or barge.

4.1.1 Monopile Foundations

Monopiles are large, thick-walled, steel tubular structures that are hammered or drilled (or both) into the seabed. Outer diameters usually range from 4 to 6 m and typically 40–50% of the pile is inserted into the seabed. The thickness and depth of the piling depends on the design load, soil conditions, water depth, environmental conditions, and design codes. Pile driving is more efficient and less expensive than drilling. Monopiles are currently the most common foundation in shallow water (20 m) developments (Figure 4.0) due to their simple foundational components. However, because they are limited by depth and subsurface conditions, they are likely to decline in popularity for use in deeper water. For Project Penelope, Horizon Wind Power plans to use larger turbines in deep water, therefore this will challenge the technical feasibility of the monopile, particularly as wave action will increasingly interfere with the dynamics of a monopile turbine structure.

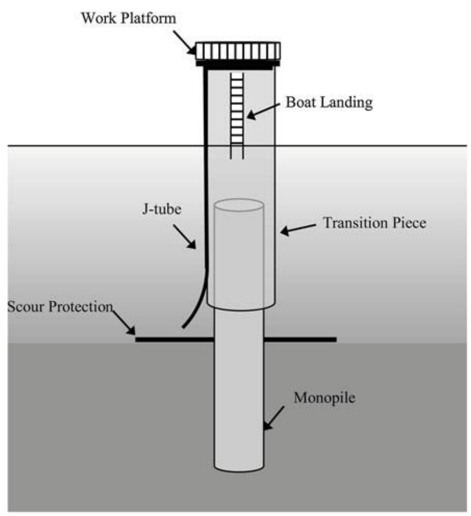


Fig 4.0 Components of Monopile Foundations

4.1.2 Tripod Foundations

Tripods consist of a central steel shaft connected to three cylindrical steel tubes through which piles are driven into the seabed. Tripods are heavier and more expensive to manufacture than monopiles but are more useful in deep water.

4.1.3 Jacket Foundations

Jacket foundations *(Figure 4.1)* are an open lattice steel truss structure, consisting of a welded tubular frame extending from the mudline to above the water surface. Pilings are driven through each leg of the jacket into the seabed or through skirt piles at the bottom of the foundation to secure the structure against lateral forces. Jackets are robust and heavy structures and require expensive equipment to transport and lift. To date, jacket foundations have not been used extensively due to the preference for shallow, near-shore environments.

The jacket foundation constructed with cross-bracings ('X') is the preferred foundation for this type of project. 'Z' and 'K' bracing will also be considered based on load settings and conditions surrounding the WTG. Engineering analysis will be published during the permitting phase of the project.

Figure 4.1: Jacket Foundation. *Source: Alpha Ventas*

4.1.4 Gravity Foundations

Gravity foundations are concrete structures that use their weight to resist wind and wave loading. They require unique fabrication facilities capable of accommodating their weight (either drydocks, reinforced quays, or dedicated barges), and have only been used in a few offshore wind sites in Europe. Gravity foundations are less expensive to build than monopiles, but the installation costs are much higher, largely due to the need for dredging, subsurface preparation, and the use of specialized heavy-lift vessels.

4.1.5 Floating Foundations

Floating foundations are a new and exciting development and have the potential to become a key part of the offshore wind development process in the future. There is currently only one floating wind site in operation – developed by Hywind in Scotland (UK) and commissioned in 2017. Horizon Wind Power is monitoring this technology with a close eye – although floating foundations are currently too expensive and economically unviable for this project. These foundations may be considered for future offshore wind developments. See Statoil's Hywind wind site in Scotland, United Kingdom[3]

[3] https://www.equinor.com/en/what-we-do/hywind-where-the-wind-takes-us.html

4.2 Turbine Technology

The wind turbine is composed of a tower, nacelle, hub, and blades. The blade/hub assembly is called the rotor. The tower is attached to the transition piece, the nacelle is attached to the tower, and the rotor is attached to the nacelle. Component size and weight varies with the electrical capacity of the turbine, the rotor dimensions, and the selection of blade, hub, and nacelle material and equipment. In 2011, Vestas released plans for a 7 MW offshore turbine; Siemens and GE both have 6MW turbines available. GE recently announced the release of their 12MW Haliade-X turbine.

4.3 Cabling

Horizon Wind Power will use cables to connect the turbines, the offshore substation, and the wind site in general to the electrical grid on land. Connection cables connect the output of strings (rows) of turbines depending on the configuration and layout of the wind site. The output of multiple collection cables is combined at a common collection point or substation for transmission to shore.

4.3.1 Inter-Array Cable

Inter-array cables connect the wind turbines within the array to each other and to an offshore substation at approximately 34.5 kV or 69 kV. A turbine transformer steps up the voltage to 138 kV – 230 kV for cable connection. Inter-array cables are connected to the turbine transformer and exit the foundation near the seabed. The amount of cabling required depends on the layout of the site, the distance between turbines, and the number of turbines.

4.3.2 Export Cable

Export cables will connect the wind site to the onshore transmission system and are typically installed in one continuous operation. Water depths along the cable route, soil type, coastline type, and many other factors determine the cable route, time, and cost. At the onshore substation, energy from the offshore wind site is delivered into the power grid. If the point of interconnection (POI) voltage is different from the submarine transmission, transformers are used to match the POI voltage; otherwise, a switchyard is used to directly interconnect the wind site. At this point, power generated is metered and purchased via a PPA with a local utility (in this case: PSEG) or by entering the Independent System Operator's merchant market. A revenue contract will be agreed and finalized at a later date.

Horizon Wind Power aims to use Quogue, NY as the substation for interconnection which is located in Long Island and is owned and operated by PSEG. However, it is worth noting that this substation is not a final choice and other viable options are being considered.

The inter-array cable and export cable may be buried under the ocean floor, at a depth of up to 5ft – depending on seabed conditions and environmental stipulations. From an environmental perspective, some habitats and marine life may be disturbed by the burial of the interconnection cable. This issue will be addressed in the environmental assessments performed within the SAP. It is also worth mentioning that the cable could be vulnerable to getting tangled with shipping anchors and fishing lines.

4.3.3 Cable Landfall Location

The exact location of landfall (the point at which the export cable will be brought ashore) is yet to be identified. Amongst other factors, the location is dependent on onshore geotechnical investigations and constraint mapping. It is expected however, that the landfall will be located along the coast to the south of Quogue, Long Island. The preferred method for bringing the cable ashore will be determined by the SAP.

4.3.4 Onshore Cable Route

Once the cable has been brought ashore, the preferred method of installation will be to install the cable within the existing road network using open trench cable burial techniques. The onshore cable route is not expected to be more than 1 mile in length.

4.4 Offshore Substation

Horizon Wind Power plans to build an offshore substation near the wind turbine array. This will increase the voltage of the electricity generated by the wind turbine to minimize transmission losses. Typically, wind sites farther than approximately 10 kilometers (km) from land have offshore substations. The substation is sized with the appropriate power rating (MVA) for the project capacity and steps up the line voltage from the collection system voltage to a higher voltage level, usually that of the POI. Although an offshore substation is being included in planning, one may not be necessary after final analysis. A decision on this will be made a later date, as the need for offshore substations depends upon the power generated, the proximity to shore and the utility company (PSEG) – which determines the tradeoffs between capital expenditures and transmission losses.

4.5 Commission

Commissioning refers to the activities after all components are installed but before commercial operations begin. This includes electrical testing, turbine and cable inspection, and all related quality control activities. The communication and control systems are tested to enable remote access to the turbines from the control room.

4.6 Decommission

The wind site will operate for a period of 25 years after which the turbines would either be decommissioned or the life of the wind site would be extended by a further application for consent. Generally, turbines are designed to last for up to 35 years, however, the economic viability of keeping the wind site in operation will be reassessed after year 20.

5.0 Environmental Studies

Horizon Wind Power plans to perform in-depth studies concerning all foreseeable environmental, social and cultural impacts of the project as part of federal, state and local permitting. This includes assessing all construction and operational impacts on the environment. As part of the application process with BOEM, Horizon Wind Power is required to produce a Site Assessment Plan (SAP) which will demonstrate all proposed assessment activities that will be conducted in a manner that conforms to responsible offshore development per 30 CFR § 585.606; including the demonstration of Best Management Practices (BMPs). This information is necessary for BOEM to complete analyses under The National Environmental Policy Act (NEPA) and other applicable laws and regulations.
Several surveys will be performed as part of the Site Assessment Plan. These include:

- Geotechnical Investigation
- Shallow Hazards Survey
- Archaeological Resources Survey
- Geological Survey
- Biological Survey

Horizon Wind Power will complete the necessary technical studies and produce written reports that meet the current requirements of federal laws and regulations, as well as state and local laws and regulations. Land use approvals will also be necessary given the connection cables come onto land. Jurisdiction will vary if landfall is made on military land versus all other land, both public and private, as it would become subject to local approvals on Long Island, NY. Some of these approvals may work concurrently within the federal and state permitting processes.

Alongside these surveys, Horizon Wind Power will produce a detailed project description required by 30 CFR § 585.610. The following project specific information will be produced:

- Contact Information
- Assessment or Technology Testing Concept
- Designation of Operator, if applicable
- Commercial Lease Stipulations and Compliance
- Location Plate
- General Structural and Project Design, Fabrication, and Installation
- Deployment Activities
- Proposed Measures for Avoiding, Minimizing, Reducing, Eliminating, and Monitoring Environmental Impacts
- CVA Nomination
- Reference Information
- Decommissioning and Clearance Procedures
- Air Quality Information
- List of all Federal, state, and local authorizations, approvals, or permits that will be required to conduct assessment activities
- List of agencies or persons with whom you consulted, or with whom you will be consulting, regarding potential impacts associated with your proposed activities
- Financial Assurance Information
- Other Information

6.0 Ports

Ports are critical to the manufacturing, construction, operations, and maintenance of offshore wind projects. The below ports have been identified based on their proximity to the wind site, as well as their size and capacity, i.e. space for staging. Shipping lanes and shipping traffic in and around these ports was also taken into account when finalizing initial port discovery. Additionally, the infrastructure in and around these ports is crucial to ensuring the smooth transition of parts from land to sea. Given that the larger project components are typically fabricated at a port-side facility, it is critical that the selected port has an access channel with sufficient depth and width to support the required vessels and high vessel traffic during construction.

BOEM compiled a report *(Port Study, 2016)*[4] which outlined port locations along the Atlantic Coast with sufficient capabilities to accommodate offshore wind staging.

The following ports were identified as potential sites for staging:

- **New London, Connecticut** – Port access width: 152.4m, port access water depths: 10.6m, Overhead draft: unlimited.

- **Perth Amboy, New Jersey** - Port access width: 182.9m, port access water depths: 10.7m, Overhead draft: unlimited.

- **Brooklyn, New York** - Port access width: 152.4m, port access water depths: 10.7m, Overhead draft: 60.4m.

- **Erie Basin, New York** - Port access width: 63.6m, port access water depths: 12.2m, Overhead draft: 60.4m.

- **Staten Island, New York** - Port access width: 609.6m, port access water depths: 16.2m, Overhead draft: 60.4.

The study also outlined several locations with sufficient O&M capabilities. These are:

- **Perth Amboy, New Jersey** - Port access width: 182.9m, port access water depths: 10.7m, Overhead draft: unlimited.

- **Staten Island, New York** - Port access width: 609.6m, port access water depths: 16.2m, Overhead draft: 60.4.

- **New London, Connecticut** – Port access width: 152.4m, port access water depths: 10.6m, Overhead draft: unlimited.

- **Montauk, New York** - Port access width: 45.7m, port access water depths: 3.7m, Overhead draft: unlimited.

[4] https://www.boem.gov/ESPIS/5/5508.pdf

- **Greenport, New York** - Port access width: 30.5m, port access water depths: 2.4m, Overhead draft: unlimited.

All potential ports may be re-evaluated (based on cost/benefit analysis and environmental impacts) as the project progresses and as new ports may be identified as they continue to adapt to offshore wind industry conditions.

7.0 Fisheries

The U.S. Coast Guard has stated that they will not restrict fishing access within offshore wind sites and between turbines. (Offshore wind turbines are expected to be spaced 0.75 – 2.3 nautical miles or more apart). It is essential to understand fishing operations and ensure that there is sufficient space to enable continued fishing activity between turbines where possible. Underwater electric cables will be installed and buried in such a way that fishing activities may continue within an offshore wind site with minimal impact.

As part of the site assessment plan Horizon Wind Power will work with all necessary environmental groups, as well as all state and federal agencies such as NYSERDA, DEC, and DOC, in order to properly evaluate the impact the site would have on fishing communities. This will include economic impacts and changes to the fishing effort as a result of the wind site. Table 7.0 gives a snapshot of revenues generated from marine life in the NY WEA.

The NY WEA (Figure 7.1) generated approximately $3.59 million in total revenue per year ($10,937 per km2), ranking it highest in revenue per km2 exposed among those BOEM WEAs examined. The NY WEA analyzed is 2 percent (about 1,780 acres) larger than the area leased.[5]

Table 7.0. FMPs exposed to NY WEA, 2007–2012. [6]

Type	Jurisdiction	Average Annual Revenue from NY WEA	Average Total Annual Revenue	Percent Total Revenue Exposed
Sea Scallop	NEFMC	$3,262,785	$428,413,267	0.8
Squid, Mackerel, Butterfish	MAFMC	$194,935	$40,849,295	0.5
Monkfish	NEFMC, MAFMC	$28,340	$19,759,447	0.1
Atlantic Herring	NEFMC	$28,086	$23,241,713	0.1
Summer Flounder, Scup, Black Sea Bass	MAFMC	$39,452	$33,166,172	0.1
Surfclam and Ocean Quahog	MAFMC	$22,385	$64,967,095	~0
Skate	NEFMC	$1,395	$7,796,915	~0
Small Mesh Multispecies	NEFMC	$1,572	$10,675,728	~0
Large Mesh Multispecies	NEFMC	$960	$76,625,579	~0

Sea Scallop populations *(Figure 7.0)* range from medium to hight around the selected area for wind .

[5] Socio-Economic Impact of OuterContinental Shelf Wind Energy Development on Fisheries in the U.S. Atlantic

[6] Socio-Economic Impact of OuterContinental Shelf Wind Energy Development on Fisheries in the U.S. Atlantic

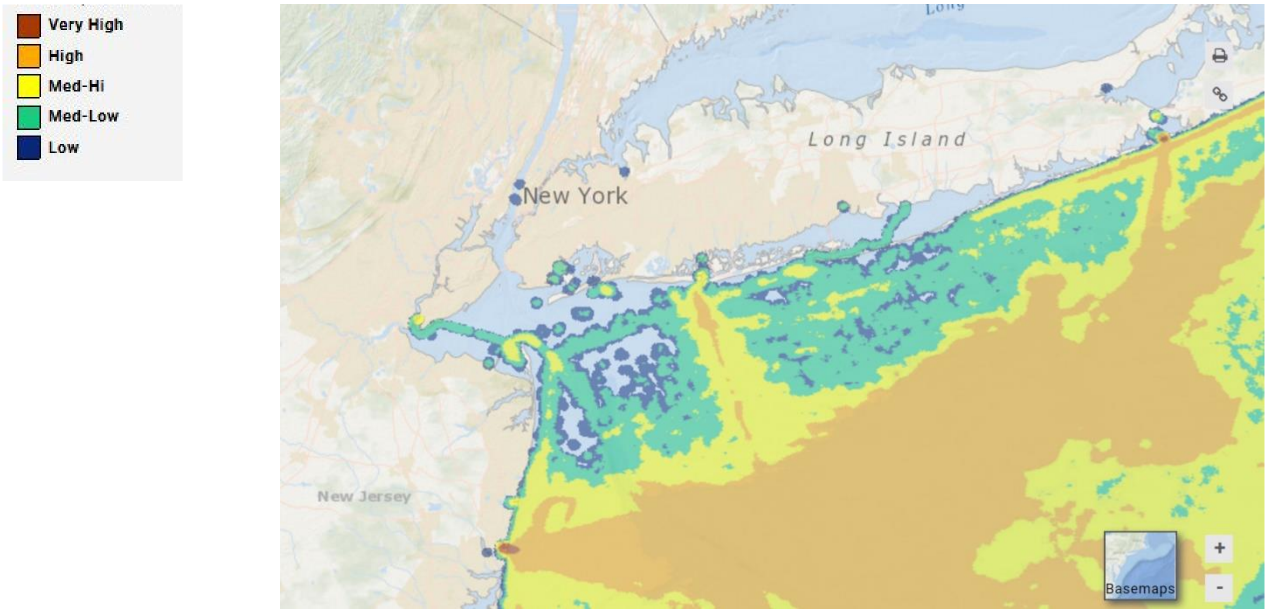


Figure 7.0: Scallop Populations 2011 – 2014. Source: Mid Atlantic Ocean Data Portal Marine Planner

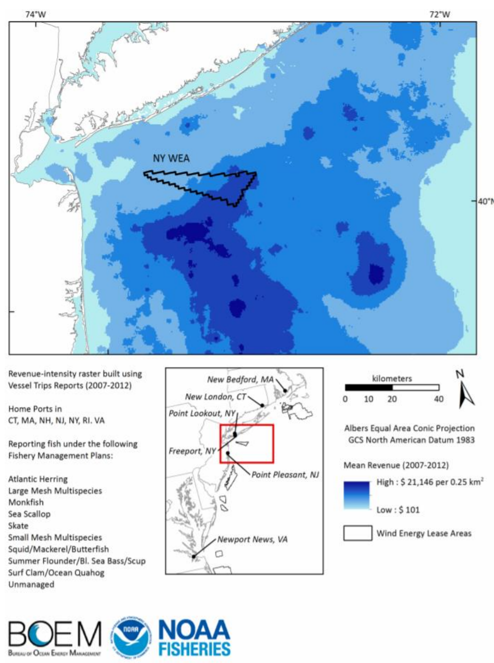


Figure 7.1: Commercial fishing activity from ports most exposed to the NY WEA, 2007–2012 (Programs, February 2017)[7]

7.1 Shipping Activity

Initial engagement with the USCG has indicated the lease site does not impede on any shipping lanes in the area. This site will require further analysis and closer coordination with the USCG.

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7 Socio-Economic Impact of Outer Continental Shelf Wind Energy Development on Fisheries in the U.S. Atlantic https://www.boem.gov/ESPIS/5/5580.pdf

8.0 Legal, Technical and Financial Qualifications

8.1 Legal Qualification

Pursuant to 30 CFR 585.106, Horizon Wind Power is legally qualified to hold an offshore lease. Both Jamie Minnick and Steve Weidenbach are citizens of the United States and Ross Thomas is a legal permanent resident of the United States. In addition, the majority of our partner companies have US based operations and are owned by US citizens (to be disclosed at a later date).

8.2 Technical Capability

Pursuant to 30 CFR 585.106 and 585.107 please find the following addressing Horizon Wind Power' Technical Capability:

Project Penelope was first conceived over 3 years ago by the founders of Horizon Wind Power and will continue to be developed by the company for the life of the project. To date, ocean, wind and grid infrastructure analysis and capabilities have been performed, as well as financial assessments, cost analysis, risk analysis and investor buy in.

Horizon Wind Power's team understands the deep complexities that go into developing a project of such magnitude, and pledge to develop the project in a way that has the best chance of success despite New York's unique business and political environment. Offshore wind is arguably one of the most challenging renewable areas, especially in the US, where offshore wind is a relatively new realm. Strong technical capabilities are key to success for a project of this scale, and Horizon Wind Power is in a strong position to achieve that. Horizon Wind Power's technical expertise and experience includes:

- Expertise in the technical and financial factors involved in wind power development.
- Political and local support from the state to the federal government.
- Successful track record of renewable energy development in New York and renewable energy development in general
- Ability to successfully gain approval from the DoD/Navy and other key stakeholders.
- A deep understanding of the political environment on both a state and federal levels.
- The Horizon Wind Power team has played an integral part in millions of dollars of wind and other renewable energy facilities in New York State.

8.3 External Support

As with all major building projects, the Horizon Wind Power team will require third party support in the form of building contractors as the project progresses. These contractors will include, but not limited to, construction, procurement, and engineering firms. Other outside stakeholders will include financial partners/investors and vendors. Horizon Wind Power is currently negotiating and working with the following types of organizations, and will continue to do so as the project progresses:

- Geophysical, geotechnical and metocean engineering firm(s) to analyze the geology of the project area and impacts of ocean currents to optimize siting and design of the anchors and cabling.
- Government policy advisers for state and local relations, as well community relations and consumer affairs.
- Environmental consulting firm(s) to optimize site plans and to navigate the local, state and federal permitting processes.
- Local Fishing groups and environmental organizations who we are directly connected with on the East Coast of Long Island.
- Civil engineers to oversee the design of the facility, construction, upgrades, and O&M activities.
- Partnerships with Universities including Stony Brook University, MIT, Cornell and NYU
- Partnerships with trade schools and technical colleges in New York and Pennsylvania.

8.4 Financial Capability

Pursuant to 30 CFR 585.106 and 585.107 please find the following addressing Horizon Wind Power' Financial capability.

The Horizon Wind Power team has a wealth of experience in renewables finance – specifically wind and solar M&A transactions. This experience is made up of large corporate deals, fund raising, transaction management and tax equity for some of the largest companies in the world – which will be crucial to achieving a strong balance between maximizing shareholder value and ensuring the final customer gets the best price possible for their power.

The development of an offshore wind site off the southern coast of Long Island, NY will require: 1) an initial investment in Horizon Wind Power for a site assessment plan (SAP)[8], including characterization and baseline environmental collection studies (e.g. geotechnical investigations, geophysical surveys, hazard surveys, biological studies, and archaeological surveys); 2) lease of an attractively situated site for development; and 3) sufficient development and working capital to achieve the technology and asset integration. It is crucial that the Project achieve key milestones, including securing a lease, negotiating a PPA, and being granted all necessary permits.

Horizon Wind Power's construction and long-term financing plan for the project will be provided by a combination of sources, all of which are subject to change based on the operations of the company. They include:

- Sponsor equity (Series A, B & C funding rounds) from private, high-net worth individuals, venture capital, corporate and/or institutional investors (insurance companies, pension funds)
- Two-year construction loan (Paid back and closed out upon receipt of Tax Equity funds)
- Tax equity from private investment funds, financial institutions or corporations seeking a return on investment through the monetization of tax benefits
- Debt from bank loans and/or institutional markets (private placement/bond). Commercial & merchant banks, insurance companies, and pension funds have been active in the wind-energy debt markets in the United States, Europe and Asia.

[8] United States Department of the Interior Office of Renewable Energy Programs Bureau of Ocean Energy Management

8.4.1 Tax Equity

Horizon Wind Power will form a joint venture partnership with a tax equity investor who has a sufficient tax liability. The allocation of profits, cash, and tax benefits will be 'flipped' after an agreed time (usually 5.5 years). This flip will allow Horizon Wind Power, as the developer, to invest alongside the tax equity investor, maintaining aligned interest in the project, while allowing the transfer of 99% of the tax benefits to the tax equity investor. As part of the agreement, the tax equity investor will be required to relinquish 100% ownership of all assets back to Horizon Wind Power at fair market value after all tax benefits have been utilized by the investor. The flip is designed to happen as early as the end of year five, or as late as year nine, and is supposed to coincide with a time when the tax equity investor will have received a certain target rate of return, net of all tax benefits and cash distributions. The flip cannot happen before the end of year five, or due to federal regulations, the government will recapture a portion of the ITC.

One important concept to note about a partnership flip is that the cash generated by the partnership can be distributed to partners in a completely different ratio than the tax profit or loss. For instance, while the tax equity investor may get 99% of the tax profit or loss before the flip, no profit will be distributed to the investor. Instead, the investor will receive a percentage return on investment on top of the tax benefits. As mentioned, the investor will also receive a pre-agreed payment as a 'buy out' after the 5.5-year period. This type of deal is well understood within the wind power industry in the United States.

9.0 Schedule

The entire project cycle from beginning through commission will be a little over 3-3.5 years. During this time, several key milestones will need to be met: 1) Lease acceptance from the Bureau of Ocean Energy Management (BOEM), who is responsible for all leases in federal waters; 2) A Power Purchase Agreement (PPA); 3) A submitted Site Assessment Plan (SAP); and 4) financial closure.

For BOEM to grant a lease, Horizon Wind Power is required to submit a Site Assessment Plan (SAP). Key elements of the SAP are outlined below:

1. Anthropogenic Conditions and Hazards: Cables/pipelines, hydrocarbon exploration, restricted areas, subsea hazards (shipwrecks, anchorage zones, etc.), navigational aids, and territorial claims
2. Biological Conditions: Fisheries, marine sanctuaries, protected species, and benthic habitats
3. Environmental Conditions and Hazards Oceanography: Geology, bathymetry, geomorphology, seafloor conditions, seismic and volcanic activity, sediment transport, and meteorology

Horizon Wind Power is required to produce a Construction and Operation Plan (COP) which outlines the product engineering/design and construction plans required by BOEM. This report will be drawn up in parallel to the SAP. Both reports are required to be submitted to BOEM within 1-year of lease acceptance.

9.1 Project Deliverables

Horizon Wind Power will complete the following high-level deliverables to properly execute the project. These deliverables are subject to change. (Table 1: Key Deliverables)

Task	Deliverable Item	Start Date
1	Lease application submitted to BOEM	Q3 2018
2	Lease application accepted by BOEM	Q3 2018
3	SAP & COP begin	Q3 2018
4	SAP & COP submitted to BOEM	Q3 2019
5	SAP & COP accepted by BOEM	Q3 2019
6	Lease approved by BOEM	Q4 2019
7	PPA and interconnection agreed with NYPA	Q4 2019
8	Project Financial Close	Q4 2019
9	Close orders for materials	Q4 2019
10	Construction	Q2 2020
11	Commercial Operation/Commission	Q4 2021
12	Decommission	Q1 2046/2051

Table 1: Key Deliverables

10.0 Plans and Assessments

10.1 Wind Speed and Ocean Floor Assessments

Horizon Wind Power is proposing to deploy floating met buoys consisting of one TRIAXYS Wave and Current Buoy and one AXYS WindSentinel™ Floating Light Detection and Ranging (FLiDAR) Buoy on the OCS off the coast of New York to collect data in support of a future 10-15 turbine, 60-120 MW offshore wind generation project.
In general, the following federal permits/notifications will be required to support the deployment of a met buoy on the OCS:

- USACE Nationwide Permit (NWP)-5 (Scientific Measurement Devices)
- EPA OCS Air Permit (if the met buoy to be deployed by Horizon includes a combustion engine);
- USCG Private Aid to Navigation (PATON)
- USCG Local Notice to Mariners (LNTM)

If a BOEM Lease is issued for the proposed deployment area, then Horizon will submit an SAP. If an EPA OCS Air Permit and/or an SAP is required, then a Coastal Consistency Certificate may also be required from the State of New York.

10.2 COP Requirements (Continued)

Horizon would like to complete the entirety of the project approval process inclusive of executing the necessary marine and terrestrial surveys, approval of the COP and issuance of all other permits within 18 months. Based on research performed by Horizon Wind Power the following is a typical timescale that should be expected for permit preparation and approval an offshore wind site under BOEM jurisdiction:

- 6 to 8 months for survey planning/approval, execution, development of a COP, and development of all other federal, state and local permit applications.
- 24 months for BOEM COP Approval and Record of Decision (ROD). Executive Order (EO) 13807 – Indicates a Final Environmental Impact Statement (FEIS) must be issued within 12 months from the Notice of Intent (NOI); ROD and associated COP approval within 24 months of NOI.
- On April 9, 2018 EO 13807 was amended for “complex projects” and indicates a FEIS must be issued within 1 year and 9 months from NOI; a ROD within 24 months from NOI; and all other permits within 90 days of ROD.

Given the proposed size of the project, Horizon Wind Power does not believe it should be classed as “complex”. Therefore, the entirety of the approval process could be completed within 18-24 months of COP submission.

11.0 About Horizon Wind Power

Horizon Wind Power is an independent offshore wind energy development company focused on developing utility scale wind sites in New York State and the North East. We create value throughout the asset life cycle, from site lease/acquisition, permitting/licensing, financing, grid integration, to final build and development.

Key Financial and Legal Notes:

- Horizon Wind Power LLC has not filed for bankruptcy, nor has it experienced any adverse financial proceedings. No bankruptcy has ever been filed by its members.
- Horizon Wind Power LLC has not had any adverse legal or regulatory actions taken against it in the past 5 years. No legal proceedings have been taken against its members in the past 5 years.