NY BIGHT CALL AREAS NOMINATION MATERIALS

BY

EAST WIND LLC

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Abbreviations & Acronyms

AC	Alternating Current
AiG	Air Gun
AIS	Automatic Identification System
AMSL	Above Mean Sea Level
BOEM	The Bureau of Ocean Energy Management
BPU	Board of Public Utilities
CMS	Condition Monitoring System
COD	Commercial operation date
COP	Construction and Operation Plan
CPT	Cone Penetration Test
CTV	Crew Transfer Vessel
CZMA	Coastal Zone Management Act
DoD	Department of Defence
DOE	The Department of Energy
EnBW	Energie Baden-Württemberg AG
ESA	Endangered Species Act
EXP	Export Cable
FAS	Free Alongside Ship
FID	Financial Investment decision
FN-A	Fairways North – A
FOU	Foundation
GE	General Electric
HN-A	Hudson North – A
HN-B	Hudson North – B
HS-A	Hudson South – A
HS-B	Hudson South – B
HS-C	Hudson South – C
HSE	Health Safety Environment

IAG	Inter Array Grid
ISO	Independent System Operator
ISONE	Independent System Operator New England
ISPS	International Ship and Port Facility Security Code
JUV	Jack-up Vessel
LCoE	Levelized Cost of Energy
LiDAR	Light Detection and Ranging
LSS	Land Substation
MAG	Magnetic Gradiometer
MassCEC	Massachusetts Clean Energy Council
MBES	Multi Beam Echo Sounder
MSL	Mean Sea Level
MVOW	MHI Vestas Offshore Wind
NOAA	National Oceanic and Atmospheric Administration
NREL	National Research and Environmental Laboratory
NYISO	New York Independent System Operator
NYSERDA	New York State Energy Research and Development Authority
O&M	Operation and Maintenance
OCS	Outer Continental Shelf
OEM	Original Equipment Manufacturer
OEM	Original Equipment Manufacturer
OPAREA	Military Operation Areas
OREC	Offshore Wind Renewables Energy Credits
OREP	Office of Renewable Energy Programs
OSS	Offshore Substation
OSV	Operation Service Vessel
OWF	Offshore Wind Farm
PJM	PJM Interconnection LLC
PoCC	Point of Common Coupling
PPA	Power Purchase Agreement

RoRo	Roll on Roll off
SAP	Sight Assessment Plan
SBP	Sub-Bottom Profiler
SCADA	Supervisory Control and Data Acquisition
SOV	Service Operation Vessel
SP	Sonar and Speaker
SPMT	Self-Propelled Modular Transporter
SSS	Side Scan Sonar
SWATCH	Small Waterplane Area Twin Hull
TSS	Traffic separation scheme
UXO	Unexploded Ordnance
WTG	Wind Turbine Generator

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1 Executive Summary

East Wind LLC is pleased to submit six Nomination Areas in response to the Bureau of Ocean Energy Management (BOEM) Call for Information and Nominations under Docket No. BOEM-2018-0004 for four Call Areas in the New York Bight. This document provides the required information, including details of the nomination areas themselves, an overall description of objectives, schedules, data informing the selection, plus legal qualifications. East Wind LLC has been incorporated by EnBW North America Inc. as sole member of East Wind LLC. EnBW North America Inc. is wholly-owned by Energie Baden-Württemberg AG (EnBW) established in Germany.

Proposed Nomination Areas:

Following an extensive analysis of the four Call Areas identified by BOEM, which considered many factors including, but not limited to, wind resource, environmental constraints and engineering requirements, East Wind has selected six potential Nomination Areas.

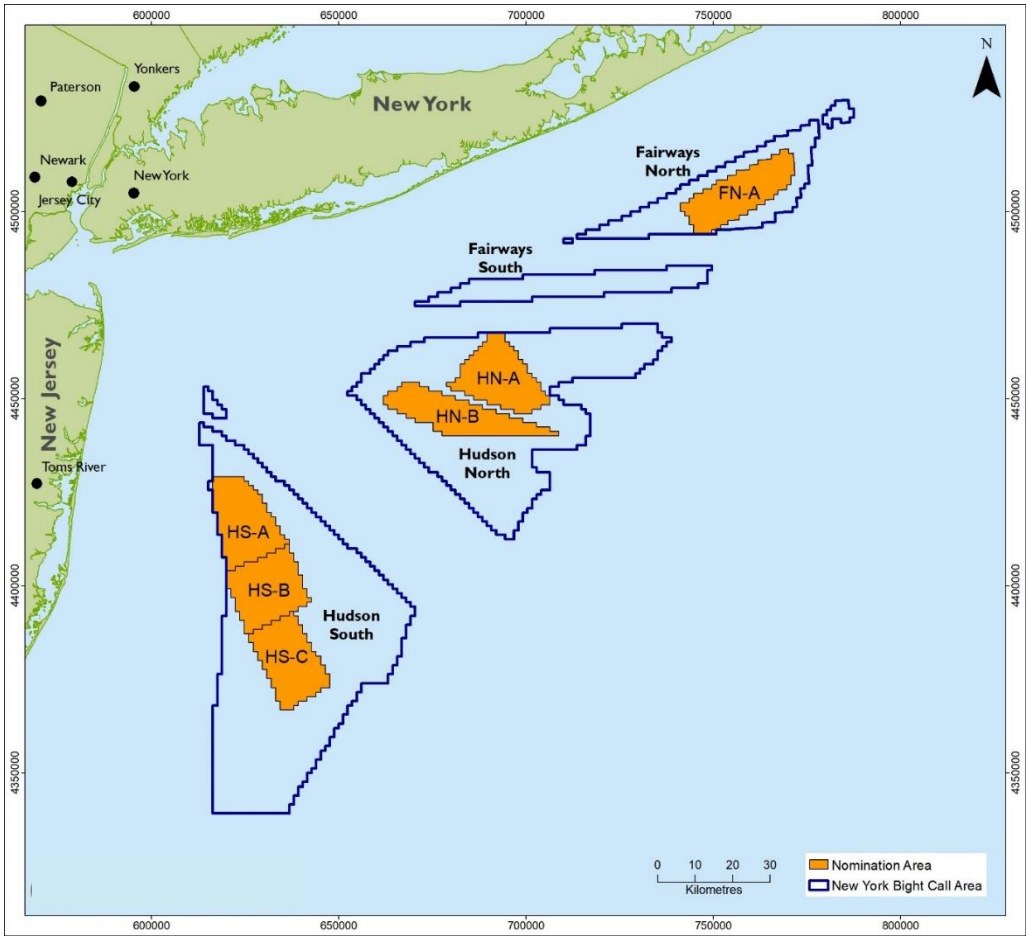


Figure 1: Overview of EnBW nomination areas

Five priority constraints have been identified during the analysis, as follows:

- Commercial fishing
- DoD Activities
- Visual impact
- Shipping and navigation
- Technical issues (Cables, Interconnection Points etc.)

Minimizing permitting risk associated with the above has been a strategic driver when selecting the Nomination Areas. This document contains full geographical specification of the proposed nomination areas, all of which are contained within the Call areas, and are each slightly less than 80,000 acres (324 km^2), as per BOEM's guidance of acceptability for an example 800 MW project presented in the Call.

The proposed Nomination Areas have the following sizes and mean water depths:

Potential Nomination Area	Area (acres)	Mean water depth (m MSL)
Fairways North A	79,360	52.6
Hudson North A	79,351	53.7
Hudson North B	79,351	50.0
Hudson South A	79,706	35.4
Hudson South B	79,706	36.1
Hudson South C	79,351	35.3

Table 1: Nomination Areas Overview

The benefits of and key constraints bounding, each proposed area are considered, alongside any additional relevant information relating to the choice of site.

Objectives and Facilities:

The design parameters considered when creating the proposed areas are given and a discussion of the required technology and techniques used to implement the offshore wind farms (OWFs) is included. The available wind turbine technology considered is that which will be available at the relevant stage of the project at which the final decision on turbines will be made. However, projects within these Nomination Areas are expected to use a future turbine generation with a rated power of 10-15 MW and a diameter of up to 220m which will likely be available from 2022/23 onwards. Additional commentary on the feasibility of the technology proposed is provided in this report.

Installation ports and logistics, are outlined. The requisite surveying necessary for the project is also detailed.

Preliminary Timeline

Assuming a lease effectively granted by BOEM for the proposed Nomination Areas with competitive interest in Q1 2020, East Wind LLC developed a preliminary timeline, and suggests factors deemed necessary to meet such a timeline.

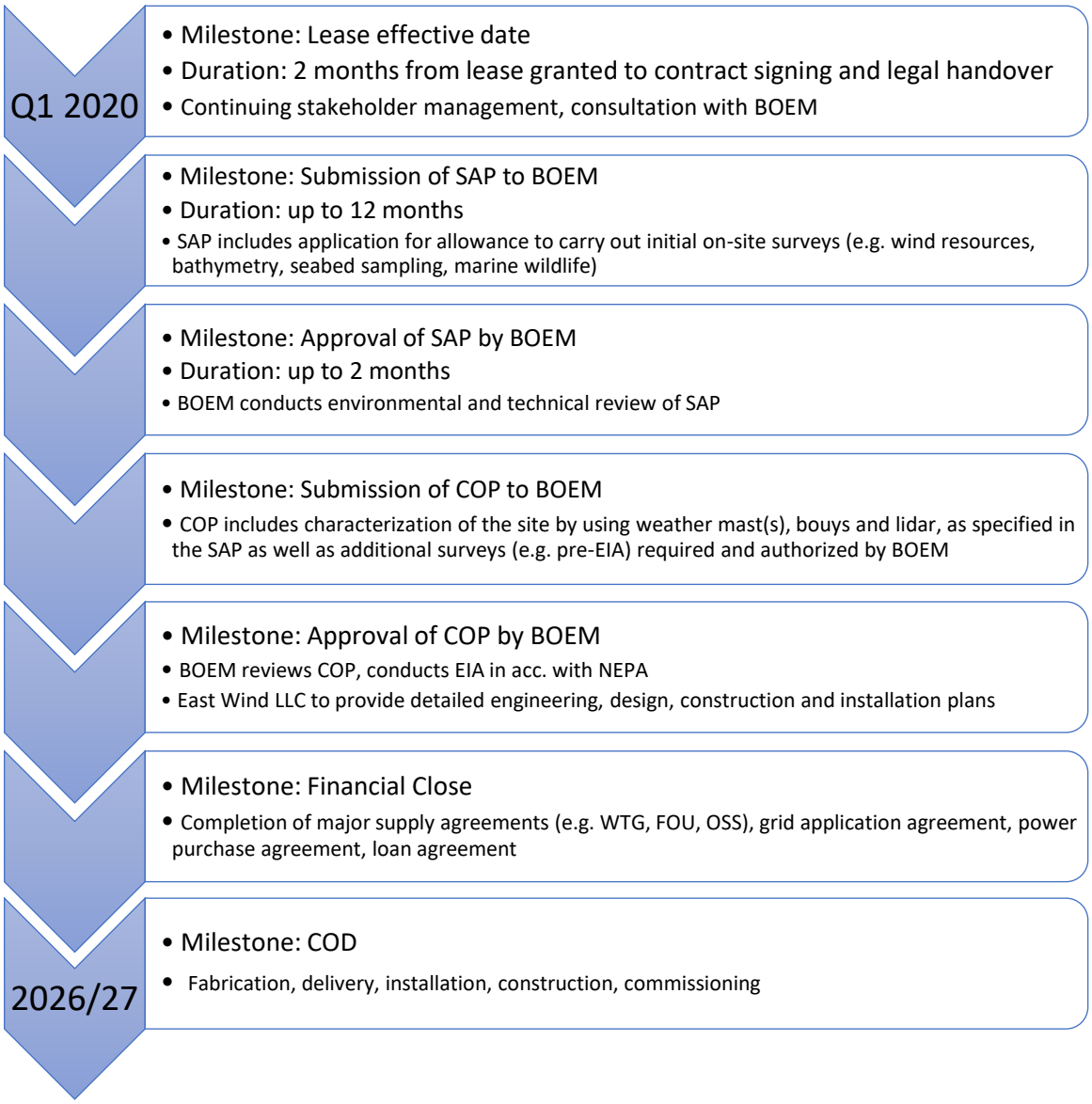


Figure 2: Preliminary Schedule for Proposed Project

Anticipating ongoing positive progress according to different impact factors and implementing East Wind LLC´s process improvements the preliminary project schedule will fully meet the States Offshore Wind targets with latest COD in 2026/27.

Renewable Energy Resource and Environmental Site Conditions:

The expected energy resource at a hub height of 120m is given below for each of the proposed Nomination Areas. This data will be validated by on-site wind speed measurements made by floating LiDAR (light detection and ranging) devices.

Potential Nomination Area	Annual mean wind speed at 120m MSL (m/s)
Fairways North A	9.4
Hudson North A	9.1
Hudson North B	9.4
Hudson South A	9.2
Hudson South B	9.2
Hudson South C	9.3

Table 2:Nomination Areas – wind speed

An assessment of the impact of the proposed projects on the local eco-systems is included within this document. The assessment details, with supporting maps, how the proposed Nomination Areas have been designed to minimise impact on the five key constraints identified above as well as reviewing other impacts such as that on species, including but not limited to; marine mammals, sea turtles, birds and fish.

For instance, maps have been included to show how the proposed Nomination Areas have been selected to minimise the OWFs effects on commercial shipping and avoiding existing cabling. The avoidance of cabling reduces costs and complications in construction. All area centres are beyond the New York State Energy Research and Development Authority (NYSERDA) recommended 20-mile distance from shore to ensure visual impact is reduced. Steps to reduce the impact of the proposed Nomination Areas on the region's fishing industry were taken when designing the Areas and are outlined herein. East Wind LLC will engage in early consultation with the local fishing industry and other key stakeholders to ensure a satisfactory project to all parties is designed. Recreational uses in the area, including bird watching and recreational boating, are substantially outwith the Call Areas and hence the Nomination Areas. Nevertheless, East Wind LLC will consider potential constraints by engaging early on with the relevant stakeholders.

Aviation and Military Activities:

Two separate offshore wind compatibility assessment were carried out by the US military, one by the Department of Defence (DoD) and one by the Department of the Navy

(published 25 June 2018). Whilst the former shows the Nomination Areas in "site-specific stipulations", the latter shows some of the sites within new wind exclusion zones, areas deemed by the Navy as non-compatible with their surface and underwater activities.

East Wind LLC will engage with DoD clearinghouse and the Navy early on in the process to negotiate the Nomination Areas being cleared for the installation of OWFs. There is precedent for the success of such negotiations and East Wind LLC predicts that the installation of OWFs within the Nomination Areas will be sanctioned by the DoD.

Conformance with State and Local Energy Planning:

Information on the New York statues and regulations applicable to offshore wind is provided. East Wind LLC will support BOEM with outreach activities and looks forward to establishing relationships with local communities and stakeholders. The company will coordinate with BOEM and all relevant state and local authorities to ensure the proposed project is developed in a way that follows all state and federal laws and permits.

Legal Qualification:

East Wind LLC as private corporation organized under the laws of the State of Delaware is an eligible person as defined in 30 CFR 585.106 and is qualified by BOEM and identified under following Company Number 15076.

Technical and Financial Capability:

Evidence was provided to BOEM to show that East Wind LLC, and its parent company EnBW, are both technically and financially capable of delivering the proposed project. This evidence included case studies of the companies' previous projects and successes, and details relating to their technical expertise and capabilities.

Overview

East Wind LLC believes it has submitted all of the required information to confirm eligibility and capability, and to indicate valid interest in the nominated areas.

2 Introduction

Offshore wind is an emerging technology in the United States. On the north east coast offshore wind development is gaining momentum. Supported by Federal and Local authorities, industry is seeing an increasing number of project opportunities. On April 11th 2018, The Bureau of Ocean Energy Management (BOEM) published a Call for Information and Nominations (Call) under Docket No. BOEM–2018–0004, for stakeholders and companies interested in commercial wind energy leases within the New York Bight. BOEM originally allowed a 45 day comment period, i.e. nominations to be received by May 29th 2018 for consideration. This was extended, on 22nd May, to July 30th, 2018. The four Call Areas are identified as Fairways North, Fairways South, Hudson North, and Hudson South, collectively "the Call Areas" (reproduced above in Figure 1). The four Call Areas are located on the Outer Continental Shelf (OCS) in the New York Bight. The Call Areas were established following the "New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas", plus input from the New York State Energy Research and Development Authority (NYSERDA).

East Wind LLC is pleased to submit six nominations in accordance with the BOEM request for the proposed offshore wind Call Areas, located in the New York Bight. East Wind LLC as a private corporation organized under the laws of the State of Delaware is an eligible person as defined in 30 CFR 585.106. East Wind LLC has been incorporated by EnBW North America Inc. as sole member of East Wind LLC. EnBW North America Inc. is wholly-owned by EnBW Energie Baden-Württemberg AG (EnBW) established in Germany.

EnBW is one of the largest utilities in Germany and supplies electricity, gas, water and energy-related products and services to around 5.5 million customers with a work-force of 21,000 employees. EnBW is active along the entire electricity and gas value chain. EnBW's current power generation assets comprise 13 GW of capacity and 1.85 GW of offshore wind projects are in operation and under development. Extensive description of the technical and financial capabilities of EnBW is presented in the Chapter 6 & 7 of this document.

Internationalization and further growth in offshore wind is a core element of the EnBW overall strategy. Recent entry into the American as well as the Asian markets initiated the development of the EnBW new regional business and established presence in these markets. Our first American Offshore Wind Project in California has provided us with a good understanding of offshore wind development processes in the USA. We believe that our expertise from the European Market and understanding as well as wiliness to be part of the new emerging American market brings valuable benefits for both sides. EnBW is oriented to create value over a long-time perspective as a company, delivered as developer, investor and operator of the offshore wind farm.

Site Selection Process

East Wind LLC conducted extensive analysis of the four Call Areas identified by BOEM in order to identify the most viable potential offshore wind areas. Selection of nomination areas is based on several factors including, but not limited to, the following:

- Wind Resource
- Environmental constraints
- Interconnection options
- Technical drivers

There are many consistent factors across the four areas, but there are notable differences, and no area is exactly like another. Some factors effectively counter-balance each other i.e. as one factor improved from one area to the next, another worsened. Hence it becomes a choice as to which is preferable, or to identify equivalence. The primary driver for East Wind LLC was to identify nominations with inherently low permitting risk within the call areas.

The key constraints identified during the analysis, are as follows:

- Commercial fishing
- DoD Activities
- Visual impact
- Shipping and navigation
- Technical Issues (Cable, Interconnection Points etc.)

Although other risks exist and are reported in this document, the above are expected to be the most significant development risks to achieving a permit within the Call Areas. The following strategic drivers have been applied for the purposes of this work, presented below.

<u>Project size:</u>

- 80,000 acres (324 km^2), as per BOEM's guidance of acceptability for an 800 MW project (water depths less than 60 m mean sea level (MSL)) presented in the Call.

<u>Permitting risk versus technical risk:</u>

- Prioritize minimizing permitting risk associated with the known constraints above the resulting technical challenges associated with water depth and distance to shore.

Constraints and strategic drivers were considered in combination for each of the four Call Areas. Where no "ideal" scenario to create a potential Nomination Area exists, reasonable means have been taken to balance the strategic drivers. As such, the development of Potential Nomination Areas, resulting characteristics and opportunities to meet strategic drivers are discussed and presented for the areas as follows:

- Fairways North A
- Hudson North A
- Hudson North B
- Hudson South A
- Hudson South B
- Hudson South C

To conclude, East Wind LLC sees the need for the future lease holder to move forward on a more expanded stakeholder engagement and consultation process in coordination with BOEM as well as state and local agencies in order to limit possible impact of the offshore wind park on the other stakeholders and cooperate with them during the project development process.

Document structure, and provision of BOEM required data

This document presents six nominations identified by East Wind LLC.

Chapters 3, 4 and 5 describes the common parameters and assessments, i.e. general area characteristics, objectives and facilities as well as preliminary schedule of the proposed activities. This provides the information requested by BOEM in points 2 and 3 of the Call, plus the common elements in response to point 4.

Each nomination area is defined separately in Chapter 6 and includes all non-confidential information required by BOEM. This responds to BOEM's point 1, including the listing of blocks included in the nomination.

Chapters 8 as well as Appendix consist of the East Wind LLC legal qualification followed by the technical and financial capabilities description which are due to their confidentiality not part of this document, as required by BOEM points 5 and 6.

3 Call Area Characterisation

The following section: „Call Area Characterisation "contained Confidential Information and was therefore redacted for publication.

This chapter will discuss the aspects of renewable energy resources and environmental conditions in general. Chapter 6 will refer to this chapter and point out specific differences between each Nomination Area.

3.1 Wind Resources

The wind analysis is based on the existing wind maps presented by NYSERDA and the Department of Energy (DOE)'s National Research and Environmental Laboratory (NREL).

With the existing data, and using mesoscale modelling, East Wind LLC estimates the average wind speed at a height of 120 m AMSL (above mean sea level), which is the equivalent to the hub height of a Siemens wind turbine generator SWT-8.0-167. The mean wind speed for each Call Area East Wind LLC considers is shown in Table 3.

Parameter	Fairways North	Hudson North	Hudson South
Mean wind speed at 120 m in m/s	9.4	9.4	9.3

Table 3: Mean wind speed of NY Bight Call Areas

The wind estimation above shows quite similar average wind speeds to offshore wind farms around the world as well as for the wind farms of EnBW AG which are under construction or which are already operating. Higher accuracy measurements will take place during further site assessment of the Nomination Areas, as described in Chapter 4.8.

3.2 Bathymetry

Water depth in the three Call Areas of interest varies from approximately 30 m MSL at the shallowest points in Hudson South, to 60 m MSL at the eastern outer edges of Hudson North, and Fairways North.

Depth ranges within each Area are (excluding small features) broadly as follows:

- Hudson South: 30 to 55 m.
- Hudson North: 40 to 60 m.
- Fairways North 40 to 60 m.

3.3 Environmental Assessment

The following lists a selection of some relevant environmental studies for New York which are either completed or still ongoing[1]:

- *The Identification of Port Modifications and their Environmental and Socioeconomic Consequences*
- *Evaluation of Visual Impact on Cultural Resources/Historic Properties: North Atlantic, Mid-Atlantic, and Florida Straits*
- *Evaluation of Visual Impact on Cultural Resources/Historic Properties: North Atlantic, Mid-Atlantic, and Florida Straits: Volume II. Appendices*
- *Socio-Economic Impact of Outer Continental Shelf Wind Energy Development on Fisheries in the U.S. Atlantic (2017) Volume 1, Volume 2*

Ongoing:

- *Atlantic Marine Assessment Program for Protected Species II*
- *EMF (Electromagnetic Field) Impacts on Elasmobranch (sharks, rays and skates) and American Lobster Movement and Migration*
- *Atlantic Fish Telemetry: Monitoring Endangered Atlantic Sturgeon and Commercial Finfish Habitat Use Offshore New York*
- *Comprehensive Seafloor Substrate Mapping and Model Validation in the Atlantic*

So far none of the completed environmental studies prove severe danger to certain species or habitats, whilst mentioning that further research still needs to be done. East Wind LLC has based its nomination selections on the current outcomes of the surveys and is aware of and has taken into account possible mitigation measures such as habitat creation or restoration. In terms of possible visual impact on Cultural Resources/Historic Properties the East Wind LLC respects the resources/properties and will engage communication towards potentially affected stakeholders.

[1] https://www.boem.gov/New-York-Environmental-Studies/

3.4 Marine Wildlife

3.4.1 Marine Mammals

East Wind LLC recognises that there are a number of marine mammals that inhabit the New York Bight. Focus during assessments will be on species found with high frequency, and Endangered Species. Highest frequency cetaceans are pygmy and dwarf whales, and harbour porpoise. Species occurring with mid to low frequencies, include sperm, beaked, baleen, sei, blue, fin, and North Atlantic right whales, dolphins and seals.

Endangered species are those listed under the Endangered Species Act (ESA). There are five of these found in the New York Bight: the sei, blue, fin, sperm, and North Atlantic right whales. Three of these, the fin, sperm and North Atlantic right whales, are found with medium-frequency.

The distribution of North Atlantic Right whale shows a higher abundance in the spring and to a limited extent in the summer where mitigations will be put in place. Other endangered cetaceans are found further offshore including within the south-east of Hudson North, and a slightly higher abundance along the Hudson Shelf Valley between the Hudson South and Hudson North Areas. This is a feeding area for marine mammals.

3.4.2 Sea Turtles

Four, all ESA listed, species of sea turtles are found within the Call Areas: loggerhead, leatherback, Kemp's ridley, and green turtles. The green sea turtle was only identified in a small area in the summer, west of the Hudson South site.

Loggerhead turtles have a similar seasonal pattern to the marine mammals, with most sightings in summer. The Hudson South site has the largest number of summer sightings in the south-eastern area of the site, though it is noted that there were sightings across the Call Areas in the summer, and thus further assessment is indicated. There were also sightings along the Huston Shelf and in Hudson South in spring, and in the south-west of Hudson South in the autumn.

3.4.3 Fish

The NYSERDA-commissioned Fish and Fisheries Study (2017), identified Atlantic sturgeon, Cusk, Oceanic whitetip shark and Giant manta as likely present threatened and endangered fish species. Minor mitigations may be required, which will be established through consultation.

3.4.4 Benthic Ecology

The NYSERDA-commissioned, Analysis of Multibeam Echo Sounder and Benthic Survey Data, indicates that there are no major benthic species of conservation importance and all four Areas are suitable for development with regards to benthic ecology.

3.4.5 Conclusion Marine Wildlife

In conclusion, East Wind LLC is fully aware of the endangered species and will rely on the expertise of the parent company EnBW AG. EnBW AG is experienced in constructing in an area with endangered species in Germany. East Wind LLC is highly confident in finding suitable solutions, together with BOEM and relevant stakeholders, potentially using already proven technology to reduce harming the species. This could be, for instance, the application of an air-bubble curtain to reduce piling noise of the foundation installation. Suitable requirements will be found during further exploration of possible installation sites.

3.5 Birds and Bats

East Wind LLC referenced the NYSERDA-commissioned, Offshore Wind Birds and Bats Study (2017), which indicates that the Call Areas have a low presence of birds. In addition there is a slightly higher sensitivity to birds between the Hudson North and Hudson South Areas. Considering the general low density of birds throughout the four Call Areas, these are unlikely to pose a constraint to the development of the potential offshore wind projects.

Whilst bats are more prevalent closer to shore, they have been identified in the mid-Atlantic up to 100 miles offshore, and therefore could be present in Fairways North during the fall migration (August to October). European studies have demonstrated that bats tend to fly during windspeeds of less than 8 m/s and therefore bats are considered to be a low constraint to the offshore wind projects within the Nomination Areas.

3.6 Shipping and Navigation

East Wind LLC used the AIS (Automatic Identification System) data from the NYSERDA-commissioned Shipping and Navigation study (2017) which shows that the traffic along the southern and middle Traffic Separation Schemes (TSSs) converges and disperses (approaching and departing respectively) in a funnel shaped pattern. This funnel leads to large vessels (passenger, tanker, cargo, tugs and towing vessels) transiting the Hudson North and Hudson South sites. Hudson South would potentially require further discussions with shipping operations to divert routes to an approach into the funnel outwith the nomination areas. This is most evident in the south of Hudson South. The Fairway North Call Area has few towing and cargo vessels crossing.

3.7 Unexploded Ordnance (UXO)

Two small UXO locations were identified in Hudson South, and one in Hudson North. The nomination areas do not include these identified locations, though the one in Hudson North is immediately adjacent to one of the nomination areas. The locations are not likely to be on export cable routes. There are no identified UXO locations in fairways North. East Wind LLC is aware of these UXO locations and will avoid them for anchoring (if relevant in Hudson North) and routing of export cables (if applicable, to Hudson North). Furthermore, a detailed UXO survey will be undertaken prior to construction. The Hudson South Area lies adjacent to discontinued ocean disposal grounds, though these are not adjacent to the nomination areas. Export cable routes will be designed, where possible, to avoid these areas.

3.8 Seascape and Visual

NYSERDA commissioned a study to assess the boundaries of minimal and negligible visual impact, minimal being difficult to see or not visible in the majority of weather conditions, and negligible being un-noticeable unless pointed out. The assessment used a hypothetical wind farm at various distances from shore under a variety of meteorological conditions (Visibility Threshold Study, 2017), assuming Siemens SWT 8.0-154 turbines with a tip height of 187 m AMSL.

The results show that minimal impact is achieved at 20 miles from shore, and negligible impact at 25 miles. East Wind LLC therefore used these parameters to inform nomination selection.

East Wind LLC is aware of the strong precedent for local objection to offshore wind farm development on the basis of visual impact concerns, as seen with the Cape Wind offshore wind farm. Only the Nomination Area Fairways North A and Hudson South A are within the 25 miles distance to shore and could cause visual impact for the residents.

3.9 Fisheries

East Wind LLC is aware that discussions with the fishing industry have commenced, both on the Empire wind farm, and in principle in relation to the New York Bight Area in general. Fish species that are commercially fished and economically important include the commonly present fish and shellfish species of American shad, American eel, Tilefish, Striped bass, Atlantic surfclam, Atlantic sea scallop, Hard clam, American lobster, Horseshow crab and Blue crab.

Fishing is undertaken using both mobile and stationary fishing gear as presented in NYSERDA's Fish and Fisheries study (2017). Different gear types are used for fishing in the areas. These are divided up into mobile gear types (e.g. trawls, dredges, and purse seines), and stationary gear types (e.g. gillnets, hand lines, longlines, pots and traps).

Experience from Europe shows that fishing with mobile gear can be more of a concern for offshore wind farm development, because the equipment interacts with the sea-bed and could contact and snag on wind farm infrastructure. Hudson North (and Fairways South, not considered by East Wind) show the highest activity in respect of fishing, both the highest commercial fishing density in the region, and also Hudson North is used for recreational fishing. East Wind recognises that early engagement with the fishing industry is critical to develop mutually beneficial solutions. There is a significant risk to wind farm development, dependent on the successful outcome of such discussions.

3.10 Aviation and Military Activities

The Aviation and Radar Assets Study commissioned by NYSERDA in 2017 reviewed military assets in the New York Bight areas. Offshore WTGs are not of concern for aircraft approaches into any of the 26 civilian airports in the locality.

However, the Call Areas are located beneath a number of Warning Areas (three-dimensional areas designated for activities hazardous to non-participating aircraft).

The sites are also located within Military Operation Areas (OPAREAs): The Fairways North and Hudson North Areas within the Narragansett OPAREA, and part of Hudson South is within the Atlantic City OPAREA. These OPAREAs are DoD training ranges which consist of sea surface and subsurface space. They are used by the Navy's Atlantic Fleet vessels for training, testing, and system qualification. It is noted that the new maps (referenced below) produced by the Navy appear to be based on extending these OPAREAs.

In 2013, the DoD undertook an Offshore Wind Mission Compatibility Assessment. This identified "wind exclusion" areas, where wind energy development is deemed incompatible with on-going military operations by the DoD, which were used as boundary constraints on the Call Areas by BOEM. Since all Call Areas, and thus all nominations, are within the areas identified as needing "site-specific stipulations", East Wind LLC will engage at an early stage with the DoD Siting Clearinghouse to determine if potential lease areas will have any impact on military operations and/or training.

On 25 June 2018, the Department of the Navy, part of the DoD, produced its own offshore wind compatibility assessment for the US Atlantic coast (Department of the Navy Atlantic Offshore Wind Mission Compatibility, 2018). This was released after issue of the Call Areas, and selection of the Nomination Areas and shows three of the six Nomination Areas being in a wind exclusion zone, while the others are under "site specific stipulations": Hudson South C is entirely in the exclusion zone, Hudson South B approximately 75% in the exclusion zone, and finally Hudson South A is approximately 90% in the exclusion zone. These wind exclusion zones are defined by the Navy as areas which could adversely impact Navy and/or Marine Corps testing, training, and operational activities. Although the definite consequences of this assessment on the various lease areas along the coast are unknown at present, there is precedent for projects in "wind exclusion" areas reaching a compromise with the Navy. This is the case with the Coastal

Virginia Offshore Wind project by Dominion and Ørsted which is under a "wind exclusion" as per the Navy map, but has been allowed to move forward after negotiations with the Navy which only resulted in a modification of the onshore cable route. Similarly, in California, the Navy is understood to be undertaking a site-specific study that might allow projects in areas shown as wind exclusion areas on the Navy's California offshore wind compatibility assessment map.

East Wind LLC is aware of the potential risk associated with the Nomination Areas inside the Navy's wind exclusion zones and will engage with the Navy early on in the process to reach an agreement.

Cables and Pipelines

Submarine cables only cross the Nomination Areas proposed by East Wind LLC in [...]. All the other Nomination Areas were chosen without any crossing by active submarine cables or pipelines. Should further cables or pipelines be identified during further site investigations, East Wind LLC will inform relevant parties and initiate consultation.

3.11 Archaeology

3.11.1 Marine Archaeology

Eight wrecks were identified within the New York Bight Call Areas, three of which are within nomination areas. Sites will be designed around identified wrecks. In addition, a site-wide archaeological survey including both high-resolution geophysical ("HRG") survey techniques and geotechnical testing will be conducted during further exploration.

3.11.2 Palaeolithic Archaeology

NYSERDA undertook a Cultural Resources Study which found that the Call Areas are located in zones of high archaeological sensitivity. They are likely to have been inhabited by indigenous peoples for more than 12,000 years[2], but since no archaeological assessment has been conducted, no submerged sites have yet been identified. East Wind LLC will consult on the degree of investigation required. If during further exploration archaeological sensitivities will be discovered, East Wind LLC will take them into account and engage the relevant stakeholders.

3.12 Recreational Uses

The NYSERDA-commissioned Marine Recreational Uses study (2017) shows greater recreational boating activity in the Hudson North, (Fairways South) and Fairways North Areas than in Hudson South.

Wildlife viewing tours transiting the southwest portion of the Hudson South Area are outwith the nominations. Most of the whale watching, bird watching, and recreational

[2] Cultural Resources Study, 2017

boating activity is of interest to the Fairways North nomination only, close to Long Island. Even though there are just minor recreational uses in the proposed Nomination Areas, East Wind LLC will consider potential constraints by early stakeholder engagement.

4 General Description of Objectives and Facilities

The following section: „General Description of Objectives and Facilities" contained Confidential Information and was therefore redacted for publication.

The final design and layout of the project will be developed from several external parameters. These include but are not limited to:

- Site specific environmental conditions e.g. met-ocean, geological and geophysical soil characteristics,
- Interest of stakeholders such as fishermen, ocean shipping, military, coast line residents, tourism etc.
- Local/state and federal regulations
- Applicable HSE regulations
- Technological development w.r.t. turbine size, foundation concepts etc.
- Economic viability of the project

The availability and quality of relevant design parameters is continuously improving during the development phase. Even though the development is at a very early stage, this chapter anticipates and describes the future project.

All Nomination Areas have a total area of approximately 80,000 acres (324 km²), as per BOEM's guidance of acceptability for an 800 MW project (water depths less than 60 m MSL) presented in the Call. It is noted that actual leasing parameters have yet to be identified, and project size and capacity will be adapted to fit leasing and PPA drivers.

Among others, the combination of the following criteria has been considered for the identification of the proposed nomination area:

- Avoidance of areas with high marine traffic density and preferred areas for fishing
- Reduction of visual impacts for residents by proposing compact areas
- Minimization of potential obstacles for a solid construction and operation & maintenance phase, avoiding any risks to health safety and environment

Furthermore the wind farm is oriented in an almost perpendicular direction towards the main wind direction with no sheltering from other wind farms. This will lead to a high wind farm efficiency and thus to levelized costs of energy being as low as possible.

Although all constraints as mentioned above and under Chapter 3 have been considered using publicly available data, a stakeholder consultation in collaboration with BOEM

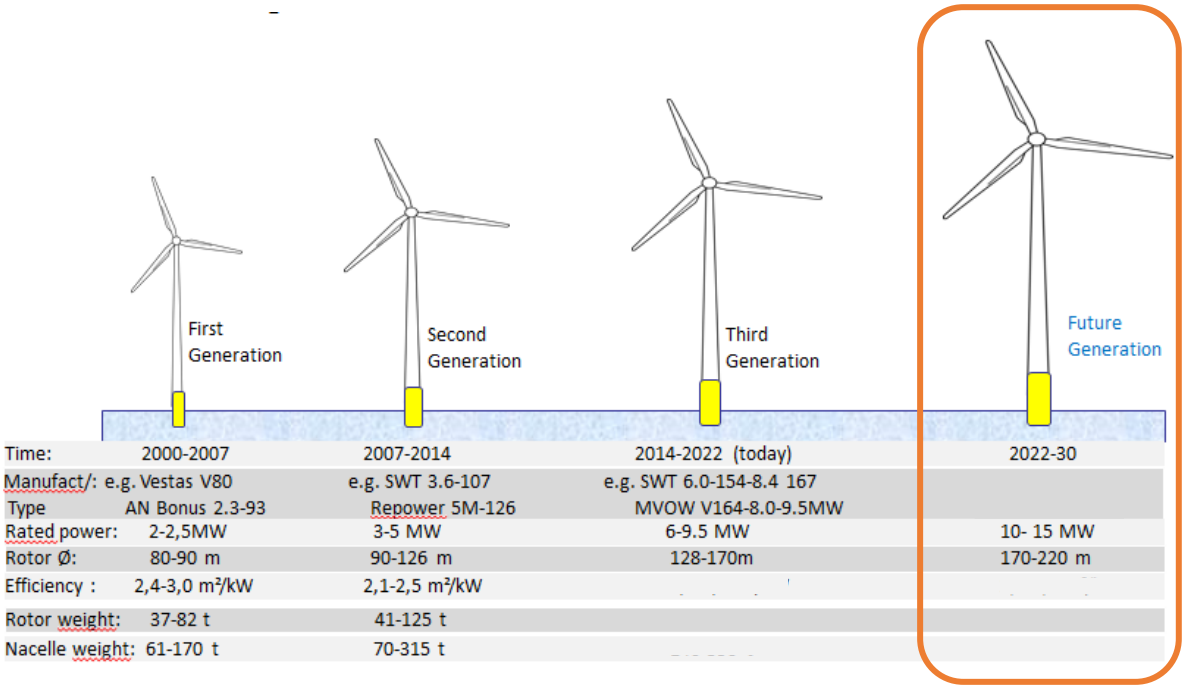
under the SAP and COP process will take place during the development phase to define detailed environmental issues.

The following describes generally the anticipated components of the OWF, the installation and port requirements and the upcoming works.

1. Wind Turbine Generator
2. Foundation
3. Inner Array Grid and Export cable
4. Offshore Substation
5. Land Substation
6. Grid Connection
7. Ports and Installation logistics
8. Envisaged offshore works for site assessment

4.1 Wind Turbine Generator (WTG)

Based upon current offshore wind turbine development, the applicant distinguishes between four wind turbine generations.



Time:	2000-2007	2007-2014	2014-2022 (today)	2022-30
Manufact/:	e.g. Vestas V80	e.g. SWT 3.6-107	e.g. SWT 6.0-154-8.4 167	
Type	AN Bonus 2.3-93	Repower 5M-126	MVOW V164-8.0-9.5MW	
Rated power:	2-2,5MW	3-5 MW	6-9.5 MW	10- 15 MW
Rotor Ø:	80-90 m	90-126 m	128-170m	170-220 m
Efficiency :	2,4-3,0 m²/kW	2,1-2,5 m²/kW		
Rotor weight:	37-82 t	41-125 t		
Nacelle weight:	61-170 t	70-315 t		

Figure 3: WTG Generation (Source: internal data)

The first generation of large scale offshore built wind turbines were slightly adapted onshore wind turbines such as the Vestas V80/90 or the AN Bonus 2.3-93. Adaptions were made with regards to corrosion protection and additional dehumidification devices, but originally the turbines were designed for onshore installation.

The second generation describes wind turbines such as the Repower 5M or the SWT 3.6-120. These turbines were purpose built for offshore wind and differ in rated power and dimensions from the concurrent onshore wind turbines.

Today's wind turbines, the 3rd generation, are also designed and used solely offshore. Compared to onshore built turbines the rated power is significantly higher, and the respective dimensions much larger compared to the currently installed onshore wind turbines. The focus during the construction of the turbines was to improve the reliability and durability of the turbines compared to the second generation. Slight modifications and reduced design reserves led to upgrades which helped to gain more yield and prepare offshore wind for subsidy free markets. Today's wind turbine generation consists mainly of direct drive train and medium speed drive train concepts. EnBW deems both systems reliable and robust enough for a future turbine design.

The future turbine generation will be available for projects from 2022 onwards with a rotor diameter of up 220 m and a rated power of 10-15 MW. This WTG applies for the potential all nominated areas. In addition to that please also see the preliminary project schedule projections in Chapter 5. Also, the future wind turbine generation consists mainly of direct drive train and medium speed drive train concepts. EnBW deems both systems reliable and robust enough to withstand the harsh offshore conditions.

East Wind LLC will benefit from EnBW´s ongoing exchanges with all OEMs regarding the new wind turbine platform. Almost all OEMs are currently developing WTGs with a larger rotor diameter and higher name plate capacity. The results of such a development are essential for the further success of the respective OEM and the economical welfare of the company. Hence all the information regarding the technical set up of the future turbine generation is strictly confidential.

The larger WTG capacity will not only reduce the number of WTG locations, but also reduces the environmental impact due to shorter installation time and with it shorter duration of piling noise during monopile or jacket installation. The expected yield increase of the WTG in combination with the reduced number of locations will lead to an overall reduced levelized cost of energy.

4.2 Foundation (FOU)

Several types of foundation are used within the offshore wind industry as shown in Figure 4.

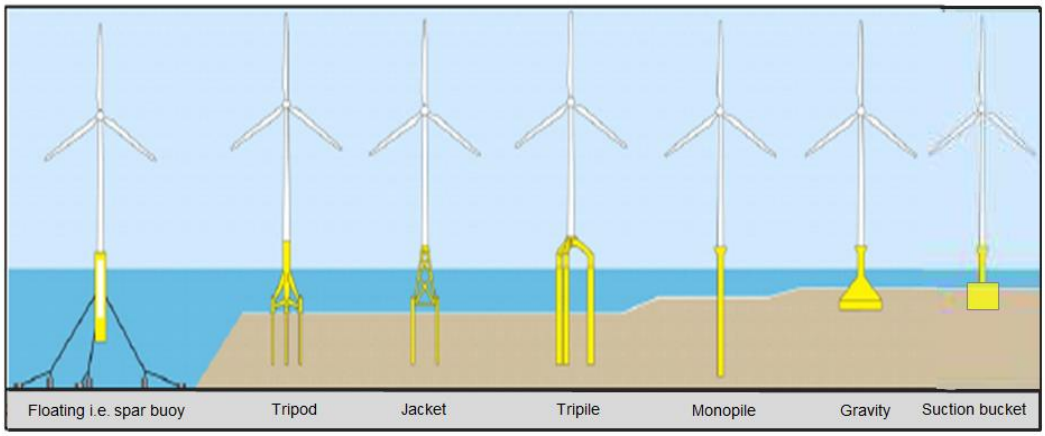


Figure 4: Foundation types (Source: Stiftung Offshore Wind Germany, adapted)

Most common is currently the use of Jacket or Monopile foundation substructures. To date, these ground fixed foundations usually cover water depths ranging from 10-50m

(Monopiles) to 40-70m (Jackets). The industry currently investigates the use of floating foundations structures for deeper waters.

The major influences on the choice of the foundation type and the foundation design are water depth, soil condition, wind/wave parameters and also the WTG itself. Hence the foundation design can only be finalized as soon as the WTG is determined.

Considering solely the site-specific water depths, Jacket, Monopile and Suction Bucket substructures seem feasible for the nominated project areas.

The following table shows typical parameters of Jacket, Monopile and Suction Bucket foundation for sites with similar water depth:

Parameter	Monopile	Jacket	Suction bucket
Water depth	<50m	50-70m	<40m
Dimensions	6-12m Diameter	25-35m Footprint	25m Diameter 15m Length
Weight	1800 t - 2900t incl. TP*	1800-2500 t incl. piles	1000-1500t Incl. TP*

Table 4: Typical parameters of foundation structure
**TP = Transition Piece: Transitional section between monopile and tower*

4.3 Inter Array Grid (IAG) and Export Cable (EXP)

All WTGs of the OWF are interconnected by the Inter Array Grid to the offshore substation (OSS). The connection to shore will be installed with Export cables.

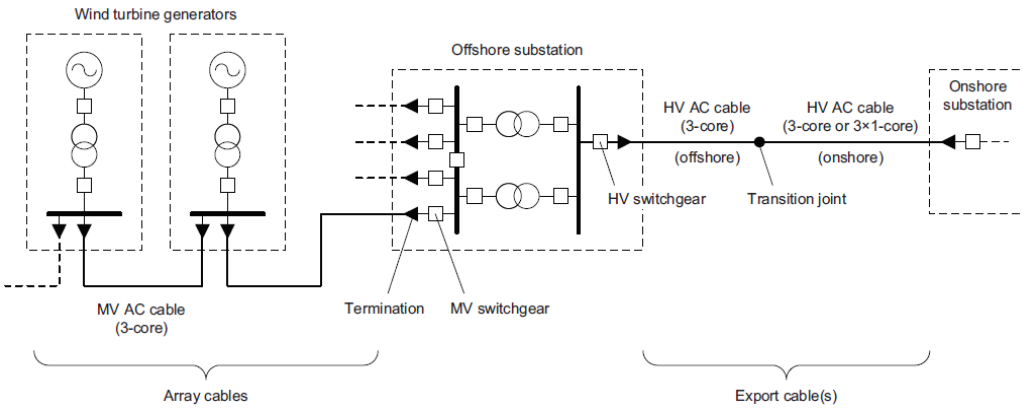


Figure 5: Schematic line chart of AC connected windfarm[3]

Depending on the final capacity of the WTGs, up to 7 WTGs will be connected to one IAG string. As a minimum IAG operation level 66 kV is currently foreseen. The cable diameter will depend on the rated power of the WTGs and also on environmental and geotechnical conditions such as water temperature, thermal conductivity of the soil and burial depth. Due to ongoing technological development, higher voltage ratings can be expected in the coming years which would lead either to a reduction of strings or reduced cable diameters.

Depending on the final point of common coupling (PoCC) the export cables will be operated at a voltage of 220 kV to 345 kV. During the upcoming design process the conductor material copper or aluminium will be decided.

4.4 Offshore Substation (OSS)

The offshore substation converts the voltage from the IAG to the voltage of the export cable.

The OSS can be divided into two different main parts

- Substructure including foundation and
- Topside

The substructure including foundation carries the weight of the topside and serves as a support to resist all environmental loads and transfer these into the soil.

[3] DNV-RP-J301 2014

The topside contains the primary electrical equipment and the required secondary and auxiliary systems.

The electrical power is generated by the wind turbines and transmitted by the internal cable grid to the substation. The OSS main power transformers step up the voltage to minimize the amount of export cable systems and the losses over the long distance. Energy will then be conducted by export cable systems to shore.

In addition to the high voltage and the control equipment, the OSS might be equipped with cranes and a helicopter winch or landing deck, and emergency accommodation.

Depending on the final size of the wind farm one or two OSSs will be installed.

Figure 6: OSS Hohe See, topside with helideck (Source: EnBW)

4.5 Land Substation (LSS)

The land substation will be the coupling link between the offshore windfarm and the connecting substation. The LSS will have several functions:

- voltage conversion of the incoming export submarine cable from the offshore substation (OSS) into the voltage of the grid operator
- installation of secondary equipment, such as protection and remote control devices
- Installation of compensation units (e.g. shunt reactors, filters, flexible AC transmission systems etc.) if required

4.6 Grid Connection

The onshore grid connection will need to be identified through liaison with the local System Operator. The relevant System Operators are NYISO, PJM and potentially ISO-NE. A suitable connection point is likely to have a strong grid in place, as close as practical to the offshore wind site, with local demand customers and the ability to export the power without major onshore upgrades.

East Wind has reviewed transmission network diagrams, plus published studies, to establish likely connection locations for each nomination area, including primary and back-up options. Further engagement with System Operators will be triggered through formal connection requests, once leases are awarded.

4.7 Installation Ports and Logistics

a) Ports

The main factor to always allow for an uninterrupted installation campaign is the availability of an efficient port with sufficient area for storage, driving and mounting works and load-out of a certain amount of wind turbine generators. It is important that the port is located close to the wind farm site. Furthermore, it is vital that the port has sufficient capacities and infrastructure such as:

- reinforced quayside and pile sheet wall as load-out area for the large and heavy components (FAS area); specifically if the towers are standing in an upright position on concrete foundations in the FAS area close to the pile sheet wall
- reinforced seabed in front of the quayside with high bearing capacities to allow for repetitive jacking operations by wind turbine installation vessels
- sufficient area with large bearing capacities to allow for storage and driving of large and heavy wind turbine components
- unrestricted nautical accessibility such as sufficient water depth; short distance to open sea and the wind farm site; no height restrictions due to bridges; no restrictions due to tides, locks and other marine traffic such as ferries or other merchant shipping
- offload area (e.g. RoRo ramp) to unload cargo ships that transport the components from the fabrication site to the pre-assembly port
- availability of electrical power supply for the stored components

- availability of equipment such as SPMTs, mobile cranes, reach stackers, forklift trucks, cherry pickers and access to other maritime industry services for tools, spare parts, repair services
- 24/7 operations have to be possible; the port must be fenced according to the ISPS code
- availability of sufficient office space close to the pre-assembly site with internet access, furniture and office equipment, sanitary rooms, recreation rooms, power supply and sewage / waste disposal
- availability of storage halls and sufficient parking spaces

Figure 7: WTG Pre-assembly Harbour Baltic 2[4]

BOEM conducted and released a port study in 2016 assessing several port locations along the Atlantic coast. Among its stated objectives, the study "identified and classified Atlantic coast ports that could potentially service proposed areas for the offshore wind energy industry." The study identified the following potential candidate ports in New York for staging purposes:

- New York – Staten Island (channel width: 609.6m / water depth: 16.2m / overhead draft: 60.4m)
- New York – Erie Basin (channel width: 63.6m / water depth: 12.2m / overhead draft: 0.4m)

[4] EnBW data

- New York – Brooklyn (S of Brooklyn Bridge / channel width: 152.4m / water depth: 10.7m / overhead draft: 60.4m)

The study furthermore identified the following candidate ports in New York for the purposes of O&M:

- Montauk – (channel width: 45.7m / water depth: 3.7m / overhead draft: unlimited)
- Greenport (Long Island) – (channel width: 30.5m / water depth: 2.4m / overhead draft: unlimited)
- New York – Staten Island – (channel width: 609.6m / water depth: 16.2m / overhead draft: 60.4m)
- Kismet Harbor – (channel width: 137.2m / water depth: 3.7m / overhead draft: 19.8m)
- Ocean Beach Harbor – (channel width: 137.2m / water depth: 4.0m / overhead draft: 19.8m)

Even though BOEM already conducted the study as mentioned above, a more detailed investigation of the harbours is necessary in order to identify the most suitable and economic solution for the specific projects.

b) Logistics

Load-out, transport and installation logistics of WTG and foundation structures are carried out by special purpose vessels such as jack up vessels, heavy lift vessels, barges or sheerleg crane vessels. The requirements for the lifting and installation activities are mainly determined by the size and the weight of the components and the marine environment in which the activities are executed. These large and heavy components require a prudent planning of activities upfront, involved parties with vast experience, efficient and safe execution of the works and proven technologies and infrastructure like vessels, equipment and ports.

Wind turbines are generally installed by vessels in a jacked-up mode to reduce movements of the components during load-out and installation. Wind turbine components are sea fastened on the vessel during transport to ensure that allowable accelerations of the components are not exceeded.

Foundation structures are, depending on the size and the weight, either loaded-out, transported and installed by a jack up vessel or by a floating heavy lift vessel which can also be supplied with components ("feeder system") while staying in the wind farm. Monopiles or jacket piles are driven into the seabed by hydraulic hammers. The transition

piece is lifted onto the monopile, the interface is covered by a grouted or bolted connection. Similarly, the jacket is positioned on the piles and also connected by grout.

The Jones Act, 1920, regulates that all transport of personnel and goods in US coastal waters ("cabotage") must only be carried out by vessels that fly the US flag, are owned by a US citizen, are built in a US ship yard and manned by US citizens (100% of officers and 75% of all non-officers). The Jones Act also applies for vessels that sail from a US port to permanently install structures in US coastal waters. As a consequence, all transport of components for offshore wind farms such as foundation structures, wind turbine generators, cables and offshore substations from US ports are restricted to vessels that are operated under the above-mentioned conditions.

Currently, there are studies and designs to convert existing vessels or even build new vessels that are Jones Act compliant. However, both conversion and new build vessels are very costly and shipowners would require a certain percentage of utilization by means of a pipeline of projects to facilitate the funding, which will be further observed.

4.8 Envisaged Works for Site Assessment

The final design of the project is based on regulatory requirements, HSE requirements and stakeholder interests but mainly on environmental conditions.

In order to determine the site specific parameters, the following works needs to be carried out prior to the design phase:

a) Offshore wind and wave measurement campaign

A wind and wave measurement campaign is planned to cover a measurement period of at least 12 consecutive months. A floating wave buoy with LiDAR system will be installed to gather the on-site wind and wave data, which are the later basis for determining design driving wind and wave conditions. Furthermore these data will be used for the yield calculation.

AXYS FLiDAR (Floating LiDAR) WindSentinel systems accurately measure wind speed and wind direction offshore at turbine hub-height and across the blade span for cost-effective wind resource assessments.

- 20 commercial deployments for FLiDAR systems globally
- 16 offshore met mast validations
- Data-as-a-Service solution provides reliable and cost effective data collection
- World's only dual-LiDAR configuration signficantly reduces risk of data outage
- Multiple redundant power supply systems, ensuring long-term operation in the event of failure of one system
- Fail-over telemetry systems ensuring consistent access to the buoy systems and data
- Supports both ZephIR and WINDCUBE LiDARs
- 4-metre polyethylene hull or 6-metre aluminum NOMAD hull options

Figure 8: Axis FliDAR (Floating LiDAR) Wind Sentinel System[5]

b) Geophysical and geotechnical site survey

A geophysical site soil investigation will be conducted for the whole site including a 500 m buffer zone. Furthermore, the export cable route from wind farm to cable landfall including a buffer on either side will be investigated.

The geotechnical site investigation will be carried out for the turbine locations and for the cable routes. This campaign will deliver descriptions of the characteristics of the given subsoil conditions in order to understand geotechnical properties and parameters of the specific soil types. These data are used as input data for the detailed design of the WTG foundations and OSS foundation, respectively.

c) Environmental impact assessment (biological surveys)

BOEM has published guidance[6], on the information requirements to be submitted as part of the COP, Appendix E of this BOEM guidance usefully provides an overview of the scope of environmental surveys or modelling required to meet the regulatory requirements of the COP.

Prior to any biological surveys in respect of seabed benthic communities, marine mammals, sea turtles or birds for instance, pre-survey planning will be conducted in consultation with BOEM to ensure the required biological surveys are conducted in a manner that addresses the regulatory information requirements for a COP.

The purpose of the biological surveys will be to determine presence/absence and distribution of biologically sensitive resources in the vicinity of the proposed activities and

[5] Axys website

[6] https://www.boem.gov/COP-Guidelines/

structures, including live bottoms (benthic communities), fish populations (including migratory populations), marine mammals, sea turtles, and birds including threatened or endangered species. Information relating to temporal and spatial abundance and seasonality of use of the proposed nomination areas for each species will be assessed.

Best Management Practices as defined by the Programmatic Impact Statement (PEIS) 2007[7] will be consulted and surveys designed to incorporate the requirements of the BMPs and mitigation developed as appropriate.

Survey reports will provide site specific descriptions of the species or habitats present and the impacting factors of the proposed activities on those species or habitats. Mitigation and protection measures will be identified to minimize adverse effects on the biological resources.

BOEM or the Office of Renewable Energy Programs (OREP) undertake their own Renewable Energy Research[8] to inform their decision-making process for renewable energy developments

4.9 Operation and Maintenance (O&M)

The following chapter describes some basic information about the Operation and Maintenance activities as they are typically performed by EnBW when operating an Offshore Wind Farm. All O&M activities follow some generic approaches and will be adapted to the individual offshore wind farm sites and related conditions and requirements.

During the operations and maintenance phase, the offshore wind energy assets will produce clean energy in an efficient manner and in full compliance with the commitments made during the project development, such as the Environmental Impact Assessment etc. with an emphasis on utilization of local work force and local industry.

In order to deliver on these high level objectives the overall operational management, including the O&M system and strategy, for an offshore wind farm (OWF) needs to be organized according to various criteria. The overall Owner's business strategy is one of the first considerations because the business strategy can affect the capability to deliver on the above mentioned commitments as well as the return on investment. The extent to which tasks are executed in-house or contracted out to third parties, determines which logistics concept is selected in operations. Legal requirements, such as tax, duty and labor laws, must also be accounted for. As well as the technical requirements and

[7] https://www.boem.gov/Renewable-Energy-Program/Regulatory-Information/Guide-To-EIS.aspx
[8] https://www.boem.gov/Renewable-Energy-Environmental-Studies/

considerations as pre-set by the built components of the OWF, the OWF's profitability is also a key aspect.

a) Operation and Maintenance Concept (O&M Concept / O&M System)

Setting up the O&M Concept or O&M System starts with defining first operational requirements based on the chosen wind farm site(s) and its conditions, developing into an operations idea during the planning phase, when details about the components design are defined and are decided.

This continues during construction with setting up a lifecycle file (part of the document management system), leading into first activities when monitoring the OWF commissioning and starting initial maintenance measures. The operation phase begins when the control room is put into operation and the interaction with the OWF components starts.

Maintenance and repair systems primarily serve to ensure the greatest possible technical turbine and substation availability. Although the basic structure of a maintenance system draws on standardized measures, a considerable degree of experience is still required from the employees or the persons conducting the maintenance. The employees' knowledge is essential for solving problems and assessing the current system conditions, because only somebody who is familiar with the turbine from daily experience will be able to assess it. To achieve this special knowledge an instruction and training concept will be in place. As well as the necessary documentation required, cooperation about instructions with the Original Equipment Manufacturer (OEM) is foreseen to set up the necessary knowledge base.

b) Types of Maintenance

Considering the overall strategy as well as the technical circumstances under which an OWF can be successful operated, all the maintenance works will follow a dedicated approach. This approach is again reflected in the overall service organization and the way the maintenance works are defined and distinguished. Generally speaking Preventive and Corrective Maintenance are distinguished, but are based again on some further dependencies and conditions. An overview about the different maintenance types and their interdependencies is visualized in the following Figure 9.

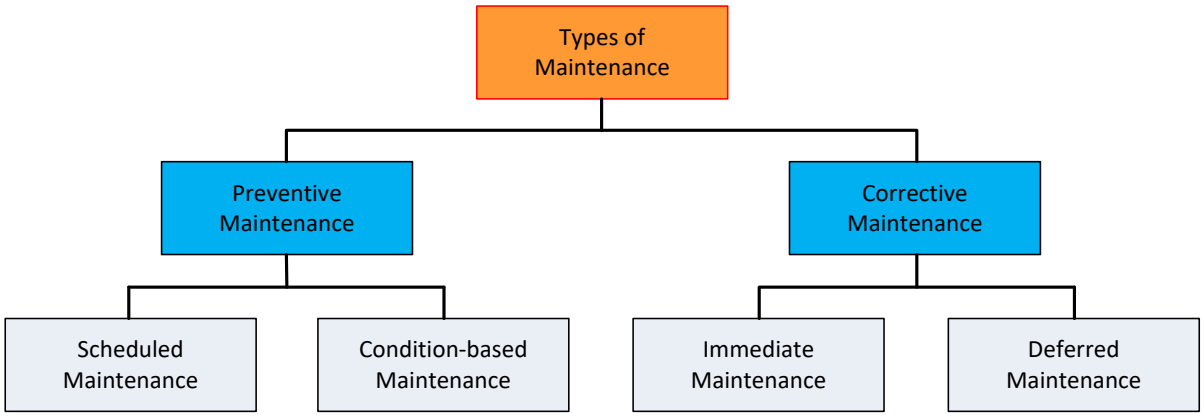


Figure 9: Overview of the different types of maintenance

Preventive Maintenance: Preventive Maintenance refers to service activities conducted before a defect requires corrective steps to be taken. Further distinction is made between Scheduled Maintenance and Condition-based Maintenance.

Scheduled Maintenance: Scheduled Maintenance generally covers regularly required and planned service activities and their scope, including an overriding description and/or reference to the underlying service plans and service manuals that are necessary to preserve the functionality, operation and safety of the components.

Condition-based Maintenance: In Condition-based Maintenance the wear-related conditions are recorded. This either takes place permanently by means of sensors or, for example, through inspections conducted by personnel. It involves recording the relevant wear reserves and comparing them with those necessary to ensure the safe operation of the plant. If the measured value falls below the minimum, it triggers the service activity prescribed for the specific component.

Corrective maintenance or Unscheduled Maintenance: Corrective Maintenance includes all activities that cannot be (pre-) planned, and all activities to rectify defects or failures. Nevertheless the scope may be the same as the activities under the Scheduled Service. There is a distinction between Immediate Maintenance and Deferred Maintenance (repair).

Immediate maintenance: Immediate Maintenance includes all activities that are not listed in Scheduled Maintenance, but can be performed with short time notice or immediate at site within the scheduled service works, when determined.

Deferred maintenance: Deferred maintenance includes all activities that are not necessary to be performed immediately and hence can be postponed. This type of corrective maintenance requires often preparatory works to prepare the execution. These include defect repairs or the replacement of (major) components which require special measures and preparations and in particular special or dedicated logistics.

The tasks to be performed are dependent on the installed offshore wind farm components and cover all activities needed to operate them safely and reliable. Typically it is distinguished between Wind Turbine Generator including its tower, the WTG foundation, the offshore substation including its foundation structure and the inter array cables. WTG foundation, offshore substation and the inter array grid cable are often summarized as Balance of Plant. Export cables are included as a "Generator lead line" connection.

c) Wind Farm Operation

The economic and safe operation of an OWF relies on the ability to forecast and prevent defects and errors; thereby reducing their impact by acting in a timely manner and providing the right personnel and material in the right place.

As well it is most important to react immediately to defects or errors to prevent a long period of reduced capacity or shutdowns. This will be done through surveillance and remote control by the personnel in the control center or control room.

The Control Room shall be operated, for 24 hours a day and 7 days a week (24/7). Whenever deemed necessary, the Control Room will also be the starting point in the case of emergency activities, troubleshooting, fault investigation and root cause analysis work.

Most of the wind farms functions and components are monitored using a Condition Monitoring System (CMS) and Supervisory Control And Data Acquisition (SCADA). The wind farm controller handles the monitoring and control of the OWF's turbines for producing and bundling the electricity produced.

The onshore facility of the control room can be combined with other aspects such as facilities for the maintenance service technicians and ad hoc replacement parts storage. Proximity to a port and/or airfield is advantageous in terms of logistics.

d) O&M logistics

Two basic offshore logistics approaches can be distinguished. Mainly based on the distance to shore and the related sailing times a so called near shore concept (or land based concept) will be established. Typically an O&M support vessel of the CTV-Type (CTV = Crew Transfer Vessel) is chosen.

CTVs are running on a daily schedule between the O&M port and the Wind farm. Consequently ports having a close distance to the OWF are beneficial. The personnel, tools and spare parts will sail on a daily basis with CTV and will be distributed within the windfarm by CTV.

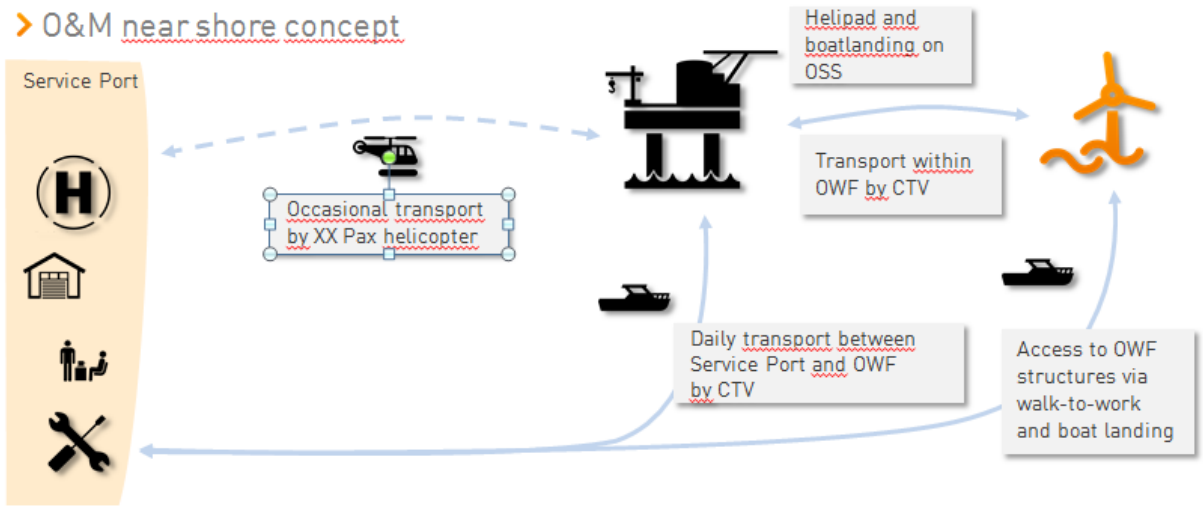


Figure 10: Schematic Overview of the O&M near shore concept

In case a so called offshore concept or sea-based concept is chosen, typically an O&M support vessel of the SOV/OSV-Type (Operation Service Vessel (OSV) / or Service Operation Vessel (SOV)) is chosen, which allow a longer lasting offshore stay for the WTG technicians.

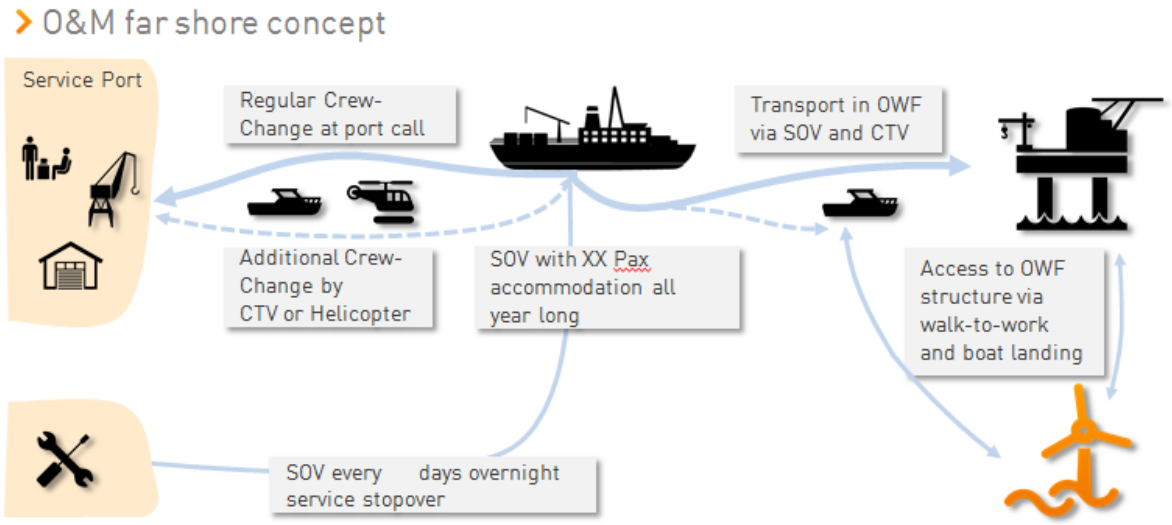


Figure 11: Schematic Overview of the O&M far shore concept

EnBW is experienced in both concepts, with many German wind farms being sufficiently far offshore to have initiated the requirement for the far shore concept.

e) O&M port

An O&M port represents the interface between the onshore and offshore operations and shall enable unhindered use of the chosen transfer technology. Distances shall be as

short as reasonably possible and berths / helicopter landing pads shall be dedicated to the wind farm operator and all local partners.

A number of possible O&M ports for CTV operations have been identified and presented, along the shorelines of New York, i.e Long Island and New Jersey, and within the bay areas of New York where port areas which can be used for OSV operations already exist.

The final choice of O&M port will be dependent on the chosen site of the offshore wind farms and their distances to shore, along with the chosen service and logistics concept in relation to service needs of the installed components, especially the offshore wind turbine.

5 Preliminary Schedule of Proposed Activities

The following section: „Preliminary Schedule of Proposed Activities" contained Confidential Information and was therefore redacted for publication.

Assuming a lease effectively granted by BOEM for the any individual nomination area with competitive interest in Q1 2020, following the current BOEM timetable to hold the lease auction in December 2019, East Wind LLC foresees a schedule of at least 6 to 7 years from preliminary project development to commercial operation date (COD). If there is no competitive interest for the nomination area, preliminary project development will start earlier, which consequently provides the possibility to reach COD sooner. As well as the uncertain starting point of project realization there will be several factors that will have an impact on the project schedule. Such factors include, but are not limited to:

- Political support on state and/or federal levels
- Stability of regulatory framework
- Affected stakeholders' willingness to cooperate (e.g. DoD, Fishermen, Shipping)
- Availability of local financing market at financial close
- Availability a sufficient local supply chain, workforce, port infrastructure as well as specific construction vessels

The illustration below shows all major steps for the construction of an example 800 MW offshore wind farm from the effective grant of the lease in Q1 2020. The described project activities and milestones are to a large extent dictated by the official BOEM OCS lease review including SAP and COP (sequential approach), which will be mandatory for achievement of site control and is required for successful project financing along with the PPA and Interconnection Agreement from NYISO/ISONE/PJM:

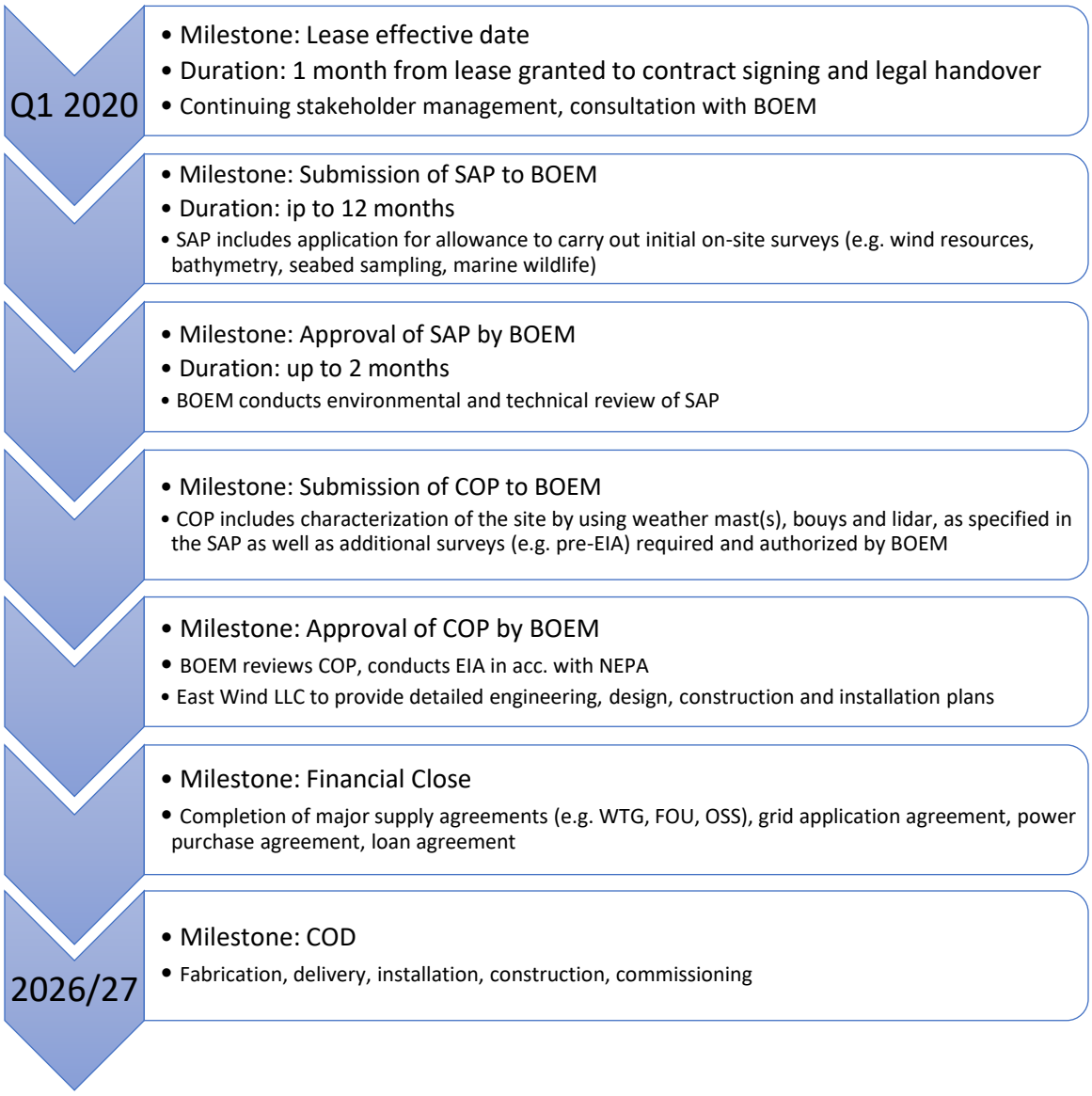


Figure 12: Preliminary Schedule for Proposed Project

In order to fulfil the states offshore wind targets (New York 2,4 GW by 2030, New Jersey 3,5 GW by 2030), we anticipated various measures to accelerate project development and construction activities to a large extent. Such actions to be taken include:

a) Productive early engagement with stakeholders (e.g. DoD, Fishermen, Shipping, Marine life organizations)

b) Comprehensive consultation with BOEM along the whole project lifecycle, starting at the very beginning (i.e. acceleration of lease process, definition of SAP and COP requirements)
c) Starting preparation of SAP and COP in parallel
d) Initiation of relevant market surveys and stakeholder consultations early in the project development phase to improve off-take, interconnection and financing related process cycle
e) Introduction of EnBW´s comprehensive lessons learned from its OWFs in the German North Sea, which have large similarities to the environmental conditions in the NY Bight Area, to improve SAP and COP related processes
f) Benefitting from EnBW´s vast in-house experience when preparing the best suitable design basis and early stage involvement of major international and upcoming local suppliers
g) Generation of cost benefits regarding the operational phase to improve LCoE further by early involvement of our inhouse O&M team
h) Support the local Supply Chain and building it up in a rational and economical way

Anticipating ongoing positive progress according to the impact factors mentioned in the first paragraph of this chapter and implementing East Wind LLC´s process improvements the preliminary project schedule will fully meet the States Offshore Wind targets. A more detailed scope of work will be designed by complying with all stakeholders (e.g. federal, state and local agencies, ISOs) needs.

6 Proposed Nomination Areas

6.1 Fairways North - A

6.1.1 Proposed Area

Based on the underlying internal use-value analysis (see Chapter 2) taking into consideration various input factors, East Wind LLC will nominate the "Fairways North – A" area as represented in Figure 13 and Table 5. It comprises an area of 79,360 acres and the closest point to shore is 20 miles.

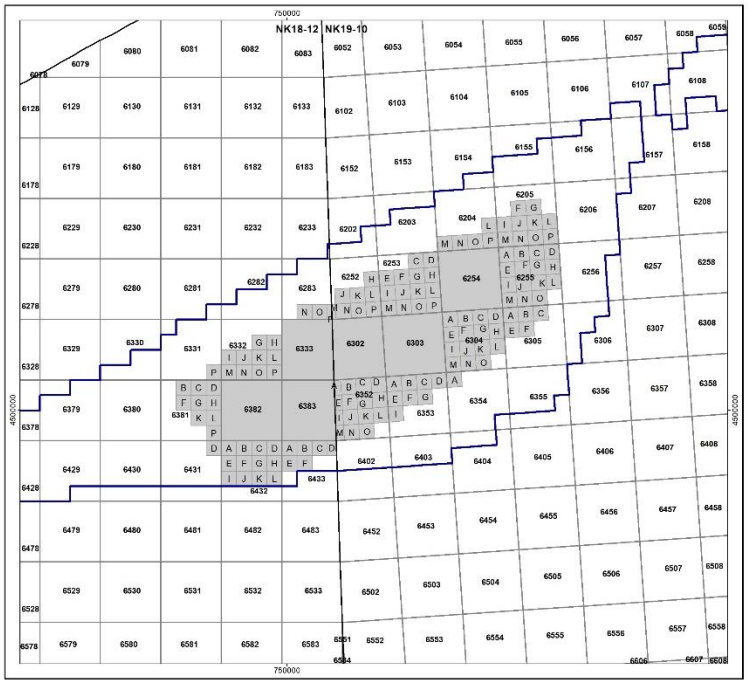


Figure 13: Nomination area Fairways North – A

Official Protraction	Entire Block	Partial Block	Sub Blocks
NK18-12	6382		
NK18-12	6383		
NK19-10	6254		
NK19-10	6302		
NK19-10	6303		
NK18-12	6333		
NK19-10		6204	L, M, N, O, P
NK19-10		6205	F, G, I, J, K, L, M, N, O, P
NK19-10		6252	H, J, K, L, M, N, O, P
NK19-10		6253	C, D, E, F, G, H, I, J, K, L, M, N, O, P
NK19-10		6255	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O
NK18-12		6283	N, O, P
NK19-10		6304	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O
NK19-10		6305	A, B, C, E, F
NK18-12		6331	P
NK18-12		6332	G, H, I, J, K, L, M, N, O, P
NK19-10		6352	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O
NK19-10		6353	A, B, C, D, E, F, G, I
NK19-10		6354	A
NK18-12		6381	B, C, D, F, G, H, K, L, P
NK18-12		6431	D
NK18-12		6432	A, B, C, D, E, F, G, H, I, J, K, L
NK18-12		6433	A, B, C, D, E, F

Table 5: Blocks and aliquots requested for Fairways North – A

6.2 Hudson North - A

6.2.1 Proposed Area

Based on the underlying internal use-value analysis (see Chapter 2) taking into consideration various input factors, East Wind LLC will nominate the "Hudson North – A" area as represented in Figure 14 and Table 6. It comprises an area of 79,351 acres and the closest point to shore is 27.3 miles.

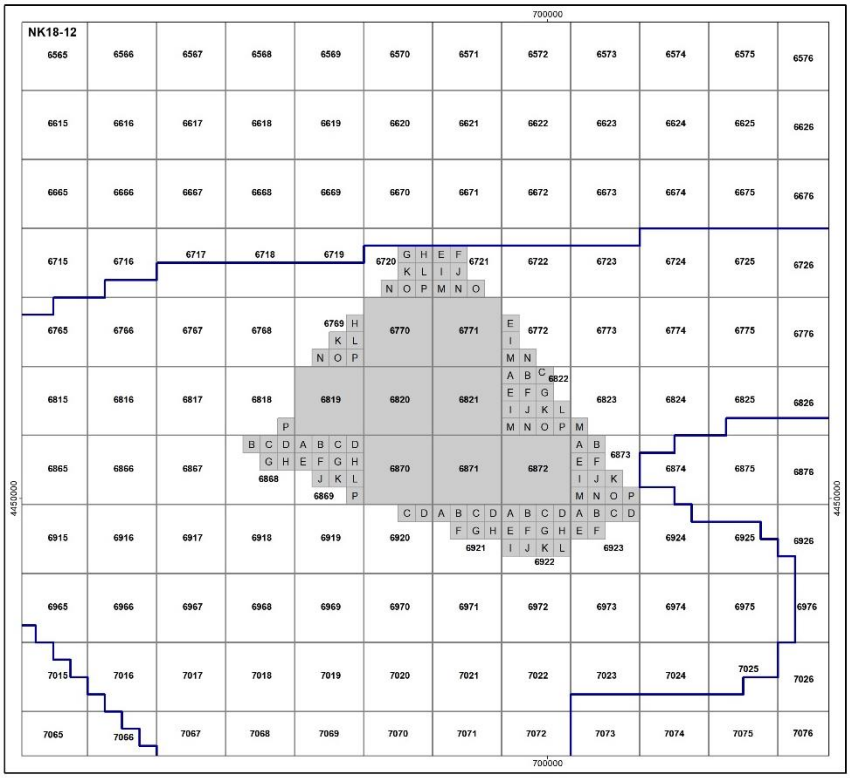


Figure 14: Nomination area Hudson North – A

Official Protraction	Entire Block	Partial Block	Sub Blocks
NK18-12	6770		
NK18-12	6771		
NK18-12	6820		
NK18-12	6821		
NK18-12	6870		
NK18-12	6871		
NK18-12	6872		
NK18-12	6819		
NK18-12		6720	G, H, K, L, N, O, P
NK18-12		6721	E, F, I, J, M, N, O
NK18-12		6769	H, K, L, N, O, P
NK18-12		6772	E, I, M, N
NK18-12		6818	P
NK18-12		6822	A, B, C, E, F, G, I, J, K, L, M, N, O, P
NK18-12		6823	M
NK18-12		6868	B, C, D, G, H
NK18-12		6869	A, B, C, D, E, F, G, H, J, K, L, P
NK18-12		6873	A, B, E, F, I, J, K, M, N, O, P
NK18-12		6920	C, D
NK18-12		6921	A, B, C, D, F, G, H
NK18-12		6922	A, B, C, D, E, F, G, H, I, J, K, L
NK18-12		6923	A, B, C, D, E, F

Table 6: Blocks requested for Hudson North – A

6.3 Hudson North - B

6.3.1 Proposed Area

Based on the underlying internal use-value analysis (see Chapter 2) taking into consideration various input factors, East Wind LLC will nominate the "Hudson North – B" area as represented in Figure 15 and Table 7. It comprises an area of 79,351 acres and the closest point to shore is 29.5 miles.

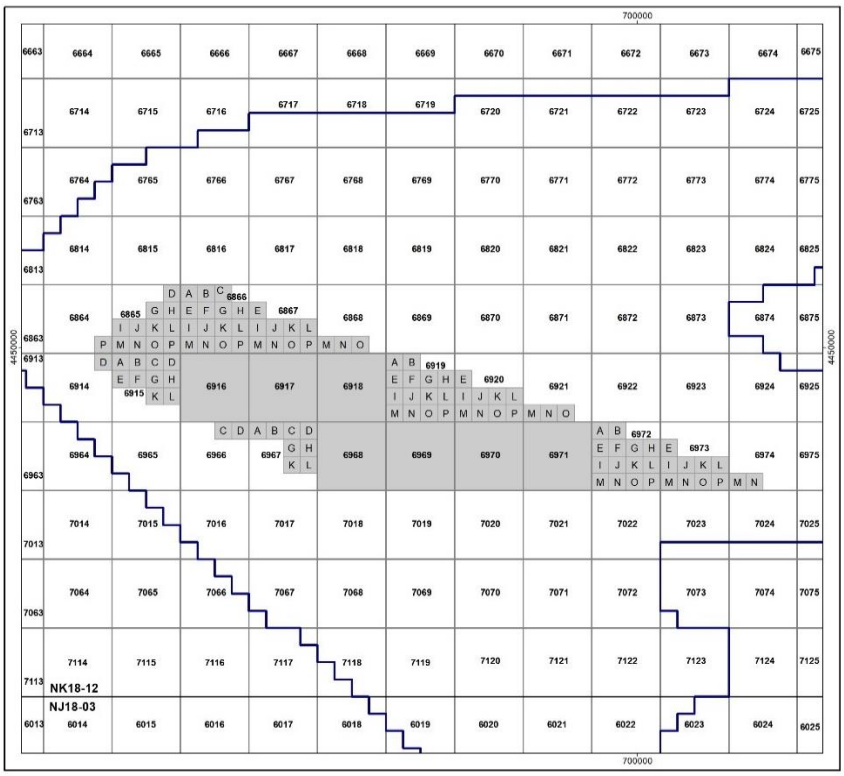


Figure 15: Nomination Area Hudson North – B

Official Protraction	Entire Block	Partial Block	Sub Blocks
NK18-12	6917		
NK18-12	6918		
NK18-12	6968		
NK18-12	6969		
NK18-12	6970		
NK18-12	6971		
NK18-12	6916		
NK18-12		6864	P
NK18-12		6865	D, G, H, I, J, K, L, M, N, O, P
NK18-12		6866	A, B, C, E, F, G, H, I, J, K, L, M, N, O, P
NK18-12		6867	E, I, J, K, L, M, N, O, P
NK18-12		6868	M, N, O
NK18-12		6914	D
NK18-12		6915	A, B, C, D, E, F, G, H, K, L
NK18-12		6919	A, B, E, F, G, H, I, J, K, L, M, N, O, P
NK18-12		6920	E, I, J, K, L, M, N, O, P
NK18-12		6921	M, N, O
NK18-12		6966	C, D
NK18-12		6967	A, B, C, D, G, H, K, L
NK18-12		6972	A, B, E, F, G, H, I, J, K, L, M, N, O, P
NK18-12		6973	E, I, J, K, L, M, N, O, P
NK18-12		6974	M, N

Table 7: Blocks requested for Hudson North – B

6.4 Hudson South - A

6.4.1 Proposed Area

Based on the underlying internal use-value analysis (see Chapter 2) taking into consideration various input factors, East Wind LLC will nominate the "Hudson South – A" area as represented in Figure 16 and Table 8. It comprises an area of 79,706 acres and the closest point to shore is 21.9 miles.

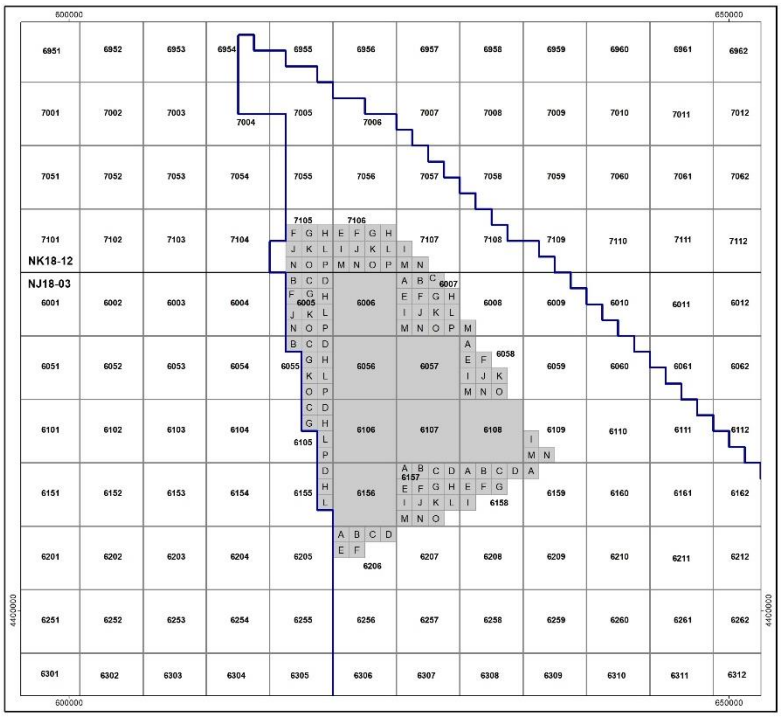


Figure 16: Nomination area Hudson South – A

Official Protraction	Entire Block	Partial Block	Sub Blocks
NJ18-03	6006		
NJ18-03	6056		
NJ18-03	6057		
NJ18-03	6106		
NJ18-03	6107		
NJ18-03	6108		
NJ18-03	6156		
NJ18-03		6005	B, C, D, F, G, H, J, K, L, N, O, P
NJ18-03		6007	A, B, C, E, F, G, H, I, J, K, L, M, N, O, P
NJ18-03		6008	M
NJ18-03		6055	B, C, D, G, H, K, L, O, P
NJ18-03		6058	A, E, F, I, J, K, M, N, O
NJ18-03		6105	C, D, G, H, L, P
NJ18-03		6109	I, M, N
NJ18-03		6155	D, H, L
NJ18-03		6157	A, B, C, D, E, F, G, H, I, J, K, L, M, N, O
NJ18-03		6158	A, B, C, D, E, F, G, I
NJ18-03		6159	A
NJ18-03		6206	A, B, C, D, E, F
NK18-12		7105	F, G, H, J, K, L, N, O, P
NK18-12		7106	E, F, G, H, I, J, K, L, M, N, O, P
NK18-12		7107	I, M, N

Table 8: Blocks requested for Hudson South – A

6.5 Hudson South – B

6.5.1 Proposed Area

Based on the underlying internal use-value analysis (see Chapter 2) taking into consideration various input factors, East Wind LLC will nominate the "Hudson South – B" area as represented in Figure 17 and Table 9. It comprises an area of 79,706 acres and the closest point to shore is 26.2 miles.

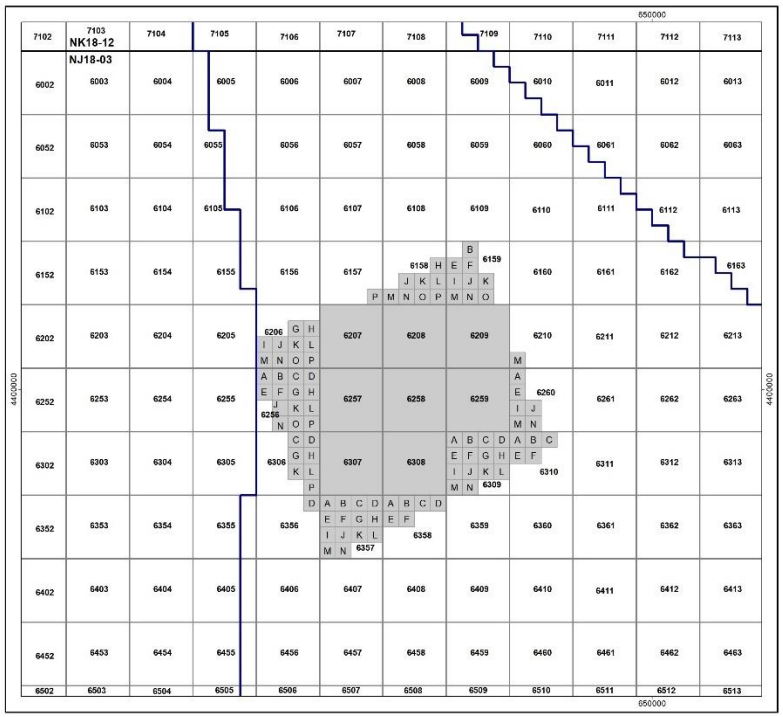


Figure 17: Nomination area Hudson South – B

Official Protraction	Entire Block	Partial Block	Sub Blocks
NJ18-03	6208		
NJ18-03	6257		
NJ18-03	6258		
NJ18-03	6259		
NJ18-03	6307		
NJ18-03	6308		
NJ18-03	6207		
NJ18-03	6209		
NJ18-03		6157	P
NJ18-03		6158	H, J, K, L, M, N, O, P
NJ18-03		6159	B, E, F, I, J, K, M, N, O
NJ18-03		6206	G, H, I, J, K, L, M, N, O, P
NJ18-03		6210	M
NJ18-03		6256	A, B, C, D, E, F, G, H, J, K, L, N, O, P
NJ18-03		6260	A, E, I, J, M, N
NJ18-03		6306	C, D, G, H, K, L, P
NJ18-03		6309	A, B, C, D, E, F, G, H, I, J, K, L, M, N
NJ18-03		6310	A, B, C, E, F
NJ18-03		6356	D
NJ18-03		6357	A, B, C, D, E, F, G, H, I, J, K, L, M, N
NJ18-03		6358	A, B, C, D, E, F

Table 9: Blocks requested for Hudson South – B

6.6 Hudson South - C

6.6.1 Proposed Area

Based on the underlying internal use-value analysis (see Chapter 2) taking into consideration various input factors, East Wind LLC will nominate the "Hudson South – C" area as represented in Figure 18 and Table 10. It comprises an area of 79,351 acres and the closest point to shore is 31.7 miles.

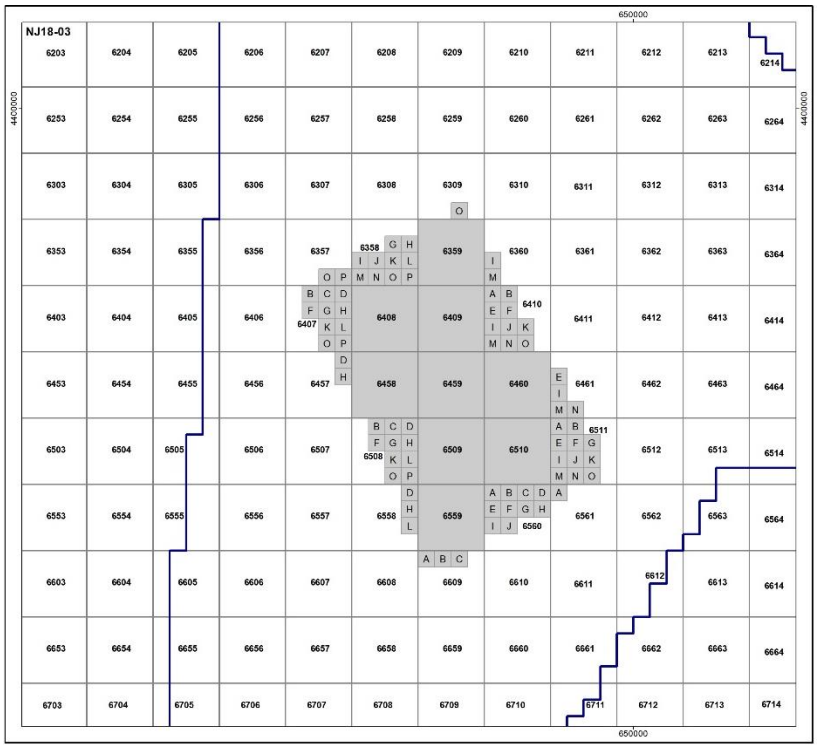


Figure 18: Nomination area Hudson South – C

Official Protraction	Entire Block	Partial Block	Sub Blocks
NJ18-03	6359		
NJ18-03	6408		
NJ18-03	6409		
NJ18-03	6458		
NJ18-03	6459		
NJ18-03	6460		
NJ18-03	6509		
NJ18-03	6510		
NJ18-03	6559		
NJ18-03		6309	O
NJ18-03		6357	O, P
NJ18-03		6358	G, H, I, J, K, L, M, N, O, P
NJ18-03		6360	I, M
NJ18-03		6407	B, C, D, F, G, H, K, L, O, P
NJ18-03		6410	A, B, E, F, I, J, K, M, N, O
NJ18-03		6457	D, H
NJ18-03		6461	E, I, M, N
NJ18-03		6508	B, C, D, F, G, H, K, L, O, P
NJ18-03		6511	A, B, E, F, G, I, J, K, M, N, O
NJ18-03		6558	D, H, L
NJ18-03		6560	A, B, C, D, E, F, G, H, I, J
NJ18-03		6561	A
NJ18-03		6609	A, B, C

Table 10: Blocks requested for Hudson South – C

7 Conformance with State and Local Energy Planning

Due to the importance of State and Local planning, East Wind LLC will support BOEM with outreach activities. These activities will include developing a public outreach communications plan and engaging with local agencies, communities, industries, and other parties to determine immediate and overarching concerns with the Proposed Project area and soliciting inputs from stakeholders.

At this point, East Wind LLC does not have a statement from state or local authorities regarding conformance with state and local energy planning but intends to pursue conformance letters should the Proposed Project at any point be awarded to East Wind LLC. The following matrix from NYSERDA highlights the applicable state and local planning requirements for offshore wind. East Wind LLC would also comply with New Jersey's state and local planning requirements if the project is connected into New Jersey If BOEM determines that there is no competitive interest and therefore East Wind LLC is ultimately awarded this project, East Wind LLC will be compliant with all the local planning requirements listed in the table below and will move forward per 30 CFR 585.231 to submit any consistency certification and necessary information to the applicable State Coastal Zone Management Act (CZMA) agency or agencies as well as BOEM.

Resource	Permitting Agency	Applicable Permit or Approval	Statutory Basis	Regulations	Applicability
Coastline of NY State	New York Department of State (DOS), Division of Coastal Resources	Coastal Zone Management Program, Federal Consistency Certification	Coastal Zone Management Act (CZMA) 16 U.S.C 1451 et seq State Executive Law Article 42	15 CFR Part 930 and 923 19 NYCRR Part 600 and 6 NYCRR Part 617	Federal consistency is the CZMA requirement that federal actions (such as the issuance of federal licenses or permits) which affect any use or natural resource of the coastal zone be consistent with the enforceable policies of a state's federally approved coastal zone program. In New York, the enforceable coastal policies are those in the New York Coastal Management Program (NYCMP), Local Waterfront Revitalization Programs (LWRP), and Long Island Sound Coastal Management Program (LISCMP). New York also requires consistency review for state actions, including issuance of permits. DOS review of the project would satisfy the requirements of both the federal and state consistency reviews.
Gas & Electric Transmission Siting	New York State Department of Public Service, Public Service Commission (PSC)	Certificate of Environmental Compatibility and Public Need under Article VII	New York State Public Service Law, Article VII	16 NYCRR Parts 85-88	Siting of major utility transmission facilities in New York is under the jurisdiction of the PSC. Major facilities are defined to include electric transmission lines with a design capacity between 100kV and 125 kV and extending ten or more miles in length or 125kV and over and extending a distance of one mile or more. The wind farm interconnection for 350 to 700 MW capacity will require a cable exceeding 125kV and thus will be subject to Article VII jurisdiction. The Article VII process provides a single forum for approval of the project, and the Certificate issued by the PSC is the only non-federal approval required to construct a transmission line. However, the applicant must demonstrate compliance with the substantive requirements of all applicable state and local approvals.

Electric Transmission Generation Siting	New York State Department of Public Service, Board on Electric Generating Siting and the Environment	Siting of Major Electric Generating Facilities - Certificate of Environmental Compatibility and Public Need	New York State Public Service Law, Article 10	16 NYCRR Parts 1000-1002	Requires a full system benefits and environmental impact review of the siting, design, construction, and operation of major electric generating facilities of greater than 25 MW or greater in New York State, including offshore areas within NYS jurisdictional waters
Underwater lands	New York Office of General Services (OGS)	State Submerged Lands Easement	New York Public Lands Law, Article 2, Section 3	9 NYCRR Part 270 & 271	The title to the bed of numerous bodies of water is held in trust for the People of the State of New York under the jurisdiction of OGS. Structures, including fill, located in, on, or above State-owned lands underwater require a license, grant, or easement from the OGS. Pipelines, cables, docks, wharves, moorings and permanent structures, including the wind turbines and transmission cables, require an easement. OGS typically issues easements for a term of 25 years
Protected Streams and Navigable Waters	New York State Department of Environmental Conservation (NYSDEC)	Article 15 Protection of Waters Permit	Environmental Conservation Act (ECL) Article 15, Title 5 and Article 70	6 NYCRR Part 608 and 621	Installation of transmission cables within New York State waters will require Article 15 permits under the New York Protection of Waters Regulatory Program for the excavation or placement of fill in navigable waters of the State and their adjacent and contiguous wetlands and disturbance of the bed or banks of a protected stream or other watercourse. Major excavation/fill projects are defined as projects that fill greater than 100 cubic yards, excavation of an area greater than 5,000 square feet, and all other activities that are not considered minor, including an underwater cable and onshore interconnections
Protected Streams and Navigable Waters	NYSDEC	Wild, Scenic, & Recreational River System Permit	ECL Article 15, Title 27	6 NYCRR Part 666	Required for activities within these specifically designated river areas, though onshore interconnections will be sited to avoid such areas.
Coastline of NY State	NYSDEC	Coastal Erosion Management Permit	ECL Article 70	6 NYCRR Part 505	The construction or placement of a structure, or any action or use of land which materially alters the condition of land, including grading, excavating, dumping, mining, dredging, filling or any disturbance of soil is a regulated activity requiring a coastal erosion management permit.
Water Quality	NYSDEC	Water Quality Certification (WQC) under Section 401 of the Clean Water Act (CWA)	U.S. Clean Water Act Section 401, 16 USC 1451; ECL Article 15, Title 5	6 NYCRR Part 608	State WQC is required for projects applying for federal permits that may affect state waters, such as the USACE Section 10/404 permit. New York administers its WQC under the Protection of Waters Regulatory Program. WQC has been conditionally granted for USACE NWPs. An individual WQC would be required if the project requires an individual USACE permit.
Stormwater	NYSDEC	Discharge Elimination System (SPDES) Construction Stormwater Permit	U.S. Clean Water Act Section 402, ECL Article 17 Title 8	6 NYCRR PART 750	An individual permit maybe required for construction and installation of onshore transmission cables and expansion of any substation. Construction activities > 1 acre of land or, if < 1 acre but within areas identified in the permit are eligible for general permits. No SPDES permit is required for a facility whose total discharges to the ground water are less than 1,000 gallons per day of sewage-wastewater containing no industrial or other non-sewage wastes.
Wetlands	NYSDEC	Article 24 Freshwater Wetlands Permit	Environmental Conservation Act (ECL) Article 24 6	6 NYCRR Part 663,664,665	Freshwater wetlands permits will apply to onshore transmission line components in the vicinity of freshwater wetland resources.
Tidal Wetlands	NYSDEC	Tidal Wetlands Permit	Tidal Wetlands Act ECL Article 25	6 NYCRR Part 661	NYSDEC requires a permit for almost any activity which will alter tidal wetlands or the adjacent areas. Tidal wetlands consist of all the salt marshes, non vegetated as well as vegetated flats and shorelines subject to tides. The

					adjacent areas extend up to 300 feet inland from the wetland boundary
Endangered & Threatened Species	NYSDEC	State endangered species consultation	ECL Article 11 Section 535	6 NYCRR Part 182	The potential impacts of the proposed project's construction, operation and decommissioning with respect endangered, threatened and species of concern listed in the State of New York are examined as part of this consultation
Historical or cultural sites	New York State Office of Parks, Recreation, and Historic Preservation (NYS OPRHP), State Historic	Section 106 Consultation under the National Historic Preservation Act (NHPA) and Section 14.09 of the New York State Preservation Office (SHPO) Historic Preservation Act	16 USC 470	6 NYCRR Part 617	The New York SHPO will require an architectural study to identify NRHP sites, state register sites, and other sensitive historical, cultural, and traditional sites within an Area of Potential Effect (APE) from the project . The SHPO Archaeologist will also require archaeological studies to identify potentially significant sites. The SHPO will comment on the project through the NEPA review. SHPO recommendations will be implemented as necessary by the NEPA lead agency. See http://nysparks.state.ny.us/shpo/

Table 11: New York State Statutes and Regulations Applicable to Offshore Wind

East Wind LLC is eager to participate in the development of offshore wind in New York with anticipation that our projects will help the state to reach its public policy objectives. The development of this Proposed Project would be a direct result of New York's Offshore Wind Master Plan. The objectives in the Master Plan include identifying areas for BOEM to consider for future offshore wind development off New York's Atlantic Coast. This call for information and nominations for the New York Bight area both fulfils New York's objectives to identify new areas for offshore wind development as well as helps to meet Governor Cuomo's 2.4 GW offshore wind goal.

East Wind LLC is also aware of New Jersey's interests in the New York Bight area. East Wind LLC will also plan to ensure that all New Jersey stakeholders and local communities are consulted in the development process. If the Proposed Project is connected in New Jersey it would contribute towards the state's policy goal to develop 3,500MW of offshore wind by 2030.

NYSERDA recently finalized an offshore wind policy options paper, which provided an assessment of alternatives for addressing a wide range of policy issues pertinent to the successful deployment of offshore wind energy. NYSERDA will soon decide the procurement mechanisms they will use to meet Governor Cuomo's goal of procuring at least 800 megawatts of offshore wind power through competitive solicitations in 2018 and 2019, and 2.4 gigawatts by 2030. This year, the New Jersey BPU has initiated the rulemaking process to establish the funding mechanism for Offshore Wind Renewable Energy Credits (ORECs) and will be preparing for the solicitation of the initial 1,100 MW procurement of offshore wind capacity by engaging with developers and stakeholders. East Wind LLC looks forward to participating in either of these solicitation processes in the future.

In conclusion, East Wind LLC looks forward to establishing relationships with local communities and stakeholders in New York and New Jersey as well as coordinating with BOEM and other state and local agencies to ensure the Proposed Project is developed in a way that follows all state and federal laws and permits.

8 Legal Qualification

8.1 East Wind LLC

East Wind LLC as private corporation organized under the laws of the State of Delaware is an eligible person as defined in 30 CFR 585.106. East Wind LLC has been incorporated by EnBW North America Inc. as sole member of East Wind LLC. EnBW North America Inc. is wholly owned by EnBW Energie Baden-Württemberg AG. East Wind LLC is legally qualified by BOEM and identified under following Company Number 15076

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Appendix