

New York State Comments on Department of Interior Bureau of Ocean Energy Management - Call for Information and Nominations for Commercial Leasing for Wind Power on the Outer Continental Shelf in the New York Bight

July 30, 2018

Bureau of Ocean Energy Management
Office of Renewable Energy Programs
45600 Woodland Road (VAM-OREP)
Sterling, Virginia 20166

Re: Response of the State of New York to the Bureau of Ocean Energy Management's ("BOEM") Call for Information and Nominations for Commercial Leasing for Wind Power on the Outer Continental Shelf in the New York Bight, Docket BOEM-2018-0004

The State of New York ("New York" or the "State") respectfully submits these comments and the information herein in response to BOEM's Call for Information and Nominations for Commercial Leasing for Wind Power on the Outer Continental Shelf in the New York Bight, issued as Docket BOEM-2018-0004 (the "Call"). This response describes in detail how New York's final Offshore Wind Master Plan and its associated studies, which are appended to these comments, along with extensive stakeholder input and additional information developed after October 2017, support the State's October 1, 2017 recommendation that BOEM delineate and lease at least four new Wind Energy Areas ("WEAs") that total 3,200 megawatts ("MW") within the area that the State has designated as the "Area for Consideration."

More specifically, this information reinforces the conclusion that BOEM should expeditiously designate multiple WEAs within the State's recommended Area for Consideration, in order to allow for robust and cost-effective wind energy development that can meet the region's objectives, including Governor Cuomo's goal of 2,400 MW of offshore wind installed by 2030. The provision of WEAs within the Area for Consideration will minimize the potential for conflicts with sensitive natural resources and existing ocean user activities that are important to the New York and regional economies. These WEAs also will provide for a robust industry competition to meet these goals and a pipeline of projects that will spur investment in related infrastructure and supply chain activities necessary to achieve offshore wind cost reductions in the United States.

In this response, the State also addresses each geographic area included in the Call that falls outside of New York's recommended Area for Consideration, and identifies the data and reasoning that caused New York not to include those geographic areas in its recommended Area for Consideration.

New York recognizes that after successful development of initially-leased WEAs, regional demand may warrant identification of additional areas, which could include reconsidering areas that are removed during the current area identification process. Thus, limiting the initial WEAs to within the State's recommended Area for Consideration would not preclude later development in additional areas. New York hopes that BOEM will thoroughly consider the information provided and referenced in these comments, and expedite new initial leasing for offshore wind development within the Area for Consideration that the State recommended in its October 1, 2017 submission to BOEM. By doing so, BOEM will set a pathway for the expeditious, successful development of the significant offshore wind resources in the New York Bight in the most cost-effective and responsible manner.

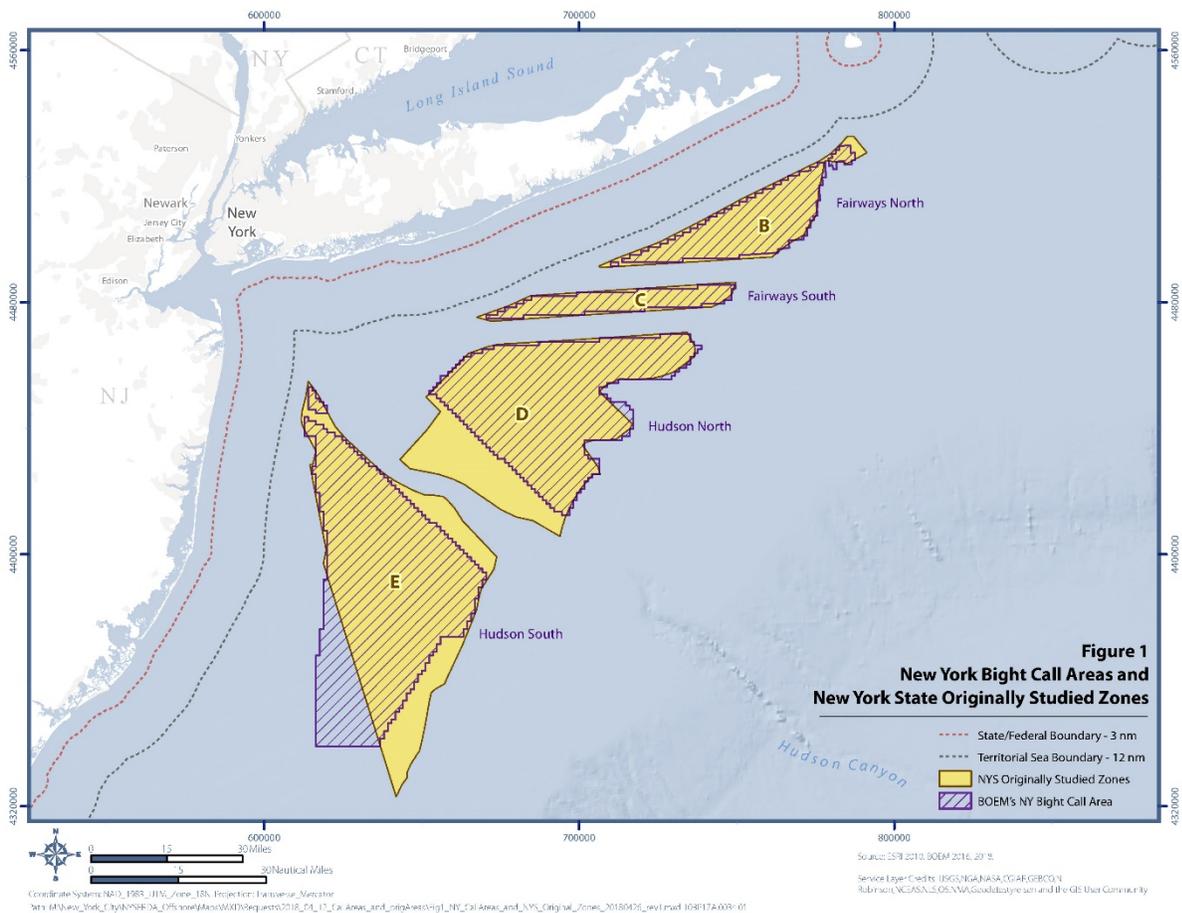
1 Introduction and Executive Summary

In response to BOEM’s April 2018 Call for Information and Nominations, New York submits these Comments, along with the New York State Offshore Wind Master Plan (“Master Plan”) and its 20 supporting studies, as well as new studies and information that have become available since the Master Plan was published. This comprehensive set of data and analyses confirms the State’s identification of the Area for Consideration as the most optimal area within which to develop WEAs at this time.

* * *

In October 2017, New York submitted to BOEM the State’s recommended *Area for Consideration for the Potential Locating of Offshore Wind Energy Areas* (the “Area for Consideration document” or “AfC document”). The 140-page Area for Consideration document identifies the ocean area south of Long Island (the “Area for Consideration”) that New York believes presents the fewest conflicts with ocean users, resources, infrastructure, and wildlife, and has the greatest potential for the cost-effective development of offshore wind energy to meet the State’s renewable energy goals. The Area for Consideration document shows numerous ways in which multiple WEAs can be sited within the Area for Consideration to exceed New York’s 2,400 MW goal. New York arrived at its Area for Consideration as a result of years of outreach and scientific study that were undertaken in the preparation of the Master Plan. The studies prepared in the Master Planning effort considered a wide range of environmental, economic, and infrastructure-related topics pertaining to an 80,000-square mile study area (known as the Offshore Study Area or “OSA”). Most of these studies were in advanced draft form when New York submitted its Area for Consideration document to BOEM; BOEM previously had been provided with draft versions of the studies for its input as an interested stakeholder.

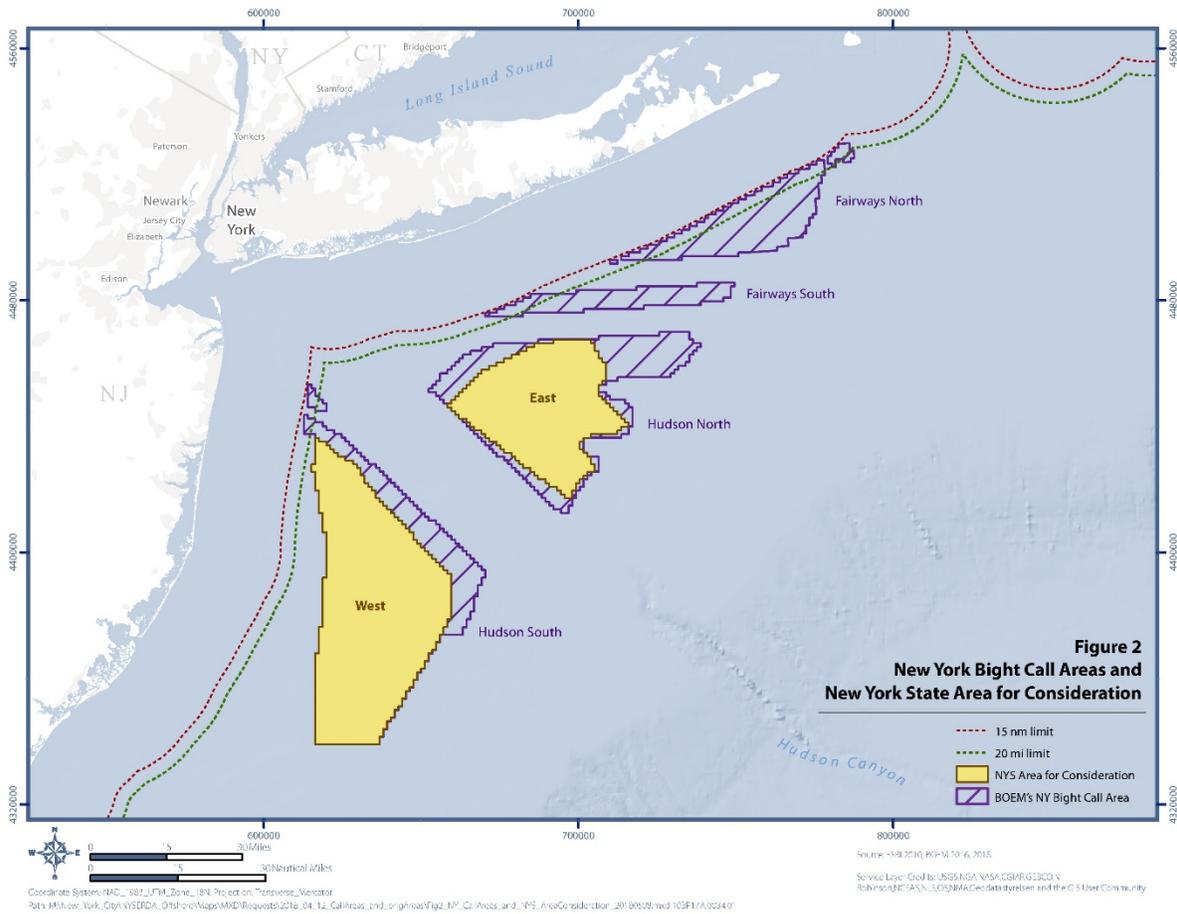
New York used a multi-layered approach to determine its Area for Consideration. Initially, the State identified basic constraints to offshore wind energy development within the OSA, which included navigation and shipping lanes and fairways (associated with Traffic Separation Schemes and safety fairways), a distance from shore of 17.3 statute miles (15 nautical miles (“nm”)), a maximum technical depth of 60 meters, and any areas within the OSA precluded by the Department of Defense. This approach resulted in the identification of four zones, identified from east to west as Zone B, Zone C, Zone D and Zone E (Zone A is Equinor’s (formerly Statoil’s) Empire Wind Lease Area) (Figure 1). Zone E was extended to the west to include ocean area that stakeholders in the fishing industry identified for the State as being of less potential conflict than areas within the originally designated zones.



In the Call, BOEM includes the two areas that comprise the Area for Consideration, which BOEM has enlarged to the full original extent of Zones D and E, and designated them as “Hudson North” and “Hudson South,” respectively. In the Call, BOEM also requests information or lease nominations within Zones B and C, which BOEM has designated as “Fairways North” and “Fairways South,” respectively.

After further study and input, New York identified the Area for Consideration, consisting of the northern and western portions of Zone E (including part of the extension) and a portion of Zone D (Figure 2). These Comments describe the factors and summarize the underlying data that caused the State to delineate the Area for Consideration, and that weigh in favor of BOEM focusing on the Area for Consideration when siting new lease areas under the Call. The Area for Consideration was shaped by data showing how potential conflicts would be minimized and cost-effectiveness maximized, thereby creating the best climate for future construction and operations. Applying the Area for Consideration document’s findings to the Call Areas would result in the following changes: (i) making the landward-most boundary of any lease area at least 20 miles from shore; (ii) shrinking the size of the Hudson South area so that its

northeastern boundary is farther from the Hudson Shelf Valley; (iii) eliminating the eastern extensions of Hudson North; and (iv) deferring consideration of Fairways North and South from consideration as potential lease areas.



The final Master Plan studies were published in January 2018, four months after the Area for Consideration document was submitted to BOEM. Nothing in the 20 final studies changes the results presented in the Area for Consideration document; those final studies only bolster the State’s conclusion that the Area for Consideration is the optimal leasing area at this time. In addition, since the publication of the Master Plan and studies, more information related to siting future offshore wind lease areas in the New York Bight has become available. That new information, which is discussed in Sections 3.1, 3.2, 3.4, and 3.6, further supports the State’s recommendation that initially, the most appropriate area for new WEAs is within the Area for Consideration, not within Fairways North or Fairways South or the remainder of Hudson North and Hudson South.

- Historic Properties. Siting offshore wind development closer than 20 miles from the shoreline in Fairways North would have the potential to visibly affect the setting, views, or viewsheds of 16 properties listed on the National Register of Historic Places.
- Higher Construction Costs. Fairway North's distance from likely viable onshore Long Island interconnection opportunities would require longer transmission lines for grid connection, which would increase the project's development cost by 12-18% over other areas and would increase the project's environmental footprint. In addition, the average water depth in Fairways North is the highest of any Call Area (about 53 meters overall and about 56 meters beyond 20 statute miles from shore), which is nearing technical development limits.
- Navigational Concerns. Fairways North poses a risk to navigation due to its proximity to the inbound Nantucket-to-Ambrose safety fairway. In combination with the Fairways South site, passage around or between wind farms could pose a safety risk for vessels attempting to maintain a course heading, and could increase vessel costs.
- Interconnection Feasibility. When considering interconnection points on Long Island, the technical complexity and associated costs of interconnection increase as the interconnection point is moved farther east. As new WEAs are sited farther west, therefore, interconnection potential on Long Island is generally expected to become more favorable. Also, WEAs sited farther west are located closer to New York City, providing interconnection optionality for these projects.
- Fishing Industry Concerns. Fairways North and South support a great diversity of fishery resources related to the number of different types of fisheries in the area (i.e., commercial, recreational, and for-hire fisheries, diverse gear and vessel types in use, and number of independent fishers) based on feedback from fishers. The State's extensive outreach reveals that this area poses the greatest concern to the highest number of individual fishers.
- Essential Fish Habitat and Fish Core Biomass. Compared to the south-westerly areas, Fairways North has higher Fish Core Biomass and supports a higher number of species-specific Essential Fish Habitat designations.
- Marine Mammal Impacts. Migrating marine mammals would face increased risks if this area were fully developed, because they would be required to cross multiple shipping fairways and a WEA in tight succession, potentially putting these organisms at increased risk of a vessel strike.

Site 2 – Fairways South:

- Visibility. Application of the 20-mile from shore threshold would reduce the area of Fairways South by about 50%, from 162 square nm to 83 square nm.
- Historic Properties. Siting offshore wind development closer than 20 miles from the shoreline in Fairways South would have the potential to visibly affect the setting, views, or viewsheds of 5 properties listed on the National Register of Historic Places.
- Navigational Concerns. Fairways South poses a risk to navigation by virtue of its relatively narrow 4-nm width and its location between the heavily trafficked inbound and outbound Ambrose-to-Nantucket traffic lanes and associated safety fairways. In addition, the location of Fairways South and North, combined with the proximity and orientation of the Ambrose-to-Nantucket traffic lanes and fairways, could compromise navigational safety for tugs and tow vessels and increase their costs if the U.S. Coast Guard (“USCG”) were to recommend a 2-nm setback.
- Interconnection Feasibility. When considering interconnection points on Long Island, the technical complexity and associated costs of interconnection increase as the interconnection point is moved farther east. As new WEAs are sited farther west, therefore, interconnection potential on Long Island is generally expected to become more favorable. Also, WEAs sited farther west are located closer to New York City, providing interconnection optionality for these projects.
- Fishing Industry Concerns. During the State’s outreach, the fishers who engaged in the process identified Fairways South as an important area for fishing operations relative to the other Call areas, second only to Fairways North.
- Submarine Cables – Costs and Fishery Concerns. Fairways South contains a high density of submarine cables per unit area. Each potential crossing of wind farm infrastructure with submarine cables increases costs and the possibility of cable-protection devices becoming snags for commercial fishing. Fairways South’s size and density of cable crossings would make it difficult to site new wind turbines in a manner that would minimize crossings.
- Marine Mammal Impacts. Migrating marine mammals would face increased risks if this area were fully developed, because they would be required to cross multiple shipping fairways and a WEA in tight succession, potentially putting these organisms at increased risk of a vessel strike.

Site 3 – Eastern Portions of Hudson North:

- Submarine Cables – Costs and Fishery Concerns. There is a high density of submarine cables that cross Site 3 within the Hudson North Call Area. Cable crossings would increase costs and increase the risk of damaging equipment used in commercial fishing operations.

Site 4 – Northern Area of Hudson North Bordering the Empire Wind Site:

- Wake Effects. The proximity of the Empire Wind lease area to Site 4 could result in excessive wake effects and a corresponding reduction in energy output in Site 4. The term “wake effect” is used to describe the reduction in wind speed that occurs down-wind of a wind farm as a result of the rotor blades of the wind turbines removing energy from the wind. Sufficient distance must be allowed between wind farms to avoid wake effects from any up-wind project causing a significant reduction in energy (i.e., greater than 1%) at the down-wind project.
- Navigational Concerns. The removal of Site 4 would improve navigational safety for vessels traveling between the Hudson North and Empire Wind sites.

Site 5 – Western Edge of Hudson North and Eastern Edge of Hudson South:

- Navigational Concerns. Logical extensions of shipping lanes between Hudson North and Hudson South and the shipping lanes west of Hudson South, along with a 1-nm navigation setback from the outer edges of these Call Areas, are suggested in this particular site in order to reduce potential conflicts with commercial shipping and navigation, and to improve maritime safety.
- Visibility. Consistent with the 20-mile-from-shore threshold identified above, a portion of Area 5 within 20 miles of New Jersey’s coast should be excluded.
- Historic properties. Siting offshore wind development closer than 20 miles from the shoreline of New Jersey in the northern portion of Site 5 has the potential to visually affect the setting, views, or viewsheds of 10 properties listed on the National Register of Historic Places.
- Hudson Shelf Valley Setback. The best available data indicate that, of the Call Areas considered, the Hudson Shelf Valley, its slopes, and its adjacent areas likely host the greatest diversity of marine species. As a result, a 2-nm ecological setback from the Hudson Shelf Valley should be observed to reduce potential impacts to marine biodiversity and fishing interests.
- Aviation and Radar Impacts. The 37-mile impact zone of the Terminal Doppler Weather Radar located at JFK Airport overlaps with the northwest corner of Hudson South; development of a

WEA here would require coordination and mitigation to ensure project compatibility with existing systems. In addition, there is a USCG Weapons Training Area in Site 5.

2 The Initial Lease Areas Should Be Limited to the Area for Consideration

BOEM’s April 2018 Call for Information and Nominations seeks information that will assist with BOEM’s Area Identification process, during which BOEM will “identify the area(s) that would be appropriate to analyze for potential leasing.”¹ The goal of the Area Identification process is to identify the offshore locations that appear most suitable for wind energy development.² Thus, for this Area Identification process, BOEM will “evaluate the Call Areas for their appropriateness for offshore wind development, balanced against potential ocean user conflicts.”³

New York has already undertaken this evaluation through an extensive public engagement and data intensive process and determined that the Area for Consideration comprises “the offshore areas that, according to the best available data, appear to hold the most promise for responsible offshore wind development ... [and] pose the fewest potential conflicts ... [and hold] the most promise for development and support[] the growth of this new industry.”⁴ For the reasons set forth in the Area for Consideration document and in these Comments, the State believes that BOEM should identify areas within the Area for Consideration for the current phase of leasing in the New York Bight. As described in Section 2.2, the State of New Jersey recently adopted a goal of developing 3,500 MW of offshore wind energy by 2030. To the extent that New Jersey requires more capacity than can be developed in the lease areas near Atlantic City, the Area for Consideration and the Empire Wind lease area alone can accommodate more wind energy development than the combined 5,900 MW of installed capacity that New York and New Jersey seek to develop by 2030. Once that offshore wind energy development is successfully established in the New York Bight, additional demand may warrant consideration of additional areas for future leasing. Furthermore, experience and technology advancements gained as a result of developing WEAs in the Area for Consideration could render it preferable to develop future WEAs in other portions of the current Call Areas, or in regions beyond the Call Areas, such as areas farther offshore. For these reasons

¹ Federal Register, Volume 83, No. 70. April 11, 2018. BOEM Commercial Leasing for Wind Power on the Outer Continental Shelf in the New York Bight Call for Information and Nominations. Section 4.1(1), page 15604.

² BOEM. 2016. Announcement of Area Identification for Empire Wind site, March 16, 2016, page 1. Accessed July 12, 2018. <https://www.boem.gov/NY-Area-ID-Announcement/>.

³ Federal Register, Volume 83, No. 70. April 11, 2018. BOEM Commercial Leasing for Wind Power on the Outer Continental Shelf in the New York Bight Call for Information and Nominations. Section 5, page 15605.

⁴ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Page 7. September 2017. Revised December 2017.

and those set forth in Section 2.2 below, the State recommends a phased approach that begins with the Area for Consideration.

By these Comments, the State urges BOEM to limit new WEAs to areas within the Area for Consideration for three main reasons. First, New York’s Area for Consideration, which is based on extensive research and outreach, identifies the areas best suited for leasing at this time, and the additional information gathered to date confirms that determination. Second, existing leases and the Area for Consideration can accommodate sufficient energy capacity to meet the region’s current renewable energy goals while still having sufficient capacity for competition between developers to achieve those goals. Finally, by conducting leasing in a phased approach, BOEM can maximize competition and revenue, in accordance with the governing regulations, and apply lessons learned from the initial leasing phase.

2.1 Extensive Data and Unprecedented Outreach Underlie New York’s Master Plan and Area for Consideration

New York’s goal of facilitating the development of 2,400 MW⁵ of offshore wind energy is an important component of the State’s ability to achieve its State Energy Plan⁶ targets and Clean Energy Standard⁷ mandate. As described in greater detail in the Area for Consideration document,⁸ the State Energy Plan’s strategy, known as Reforming the Energy Vision (“REV”), seeks to transform the State’s energy marketplace into one centered on clean, locally-sourced power. Part of the State Energy Plan/REV strategy is embodied in the Clean Energy Standard’s mandate that by 2030, 50 percent of New York’s energy must be sourced from renewables.

In January 2018, after years of intensive study and outreach, New York released its Offshore Wind Master Plan. The Master Plan identifies the Area for Consideration, describes the economic and environmental benefits of offshore wind development, addresses mechanisms to procure offshore wind energy at the lowest ratepayer cost, analyzes costs and cost-reduction pathways, recommends mitigation

⁵ New York State. 2017. New York State of the State Policy Book. Pages 54-57. Accessed July 12, 2018. <https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/2017StateoftheStateBook.pdf>.

⁶ New York State. 2015. New York State Energy Plan. Accessed July 12, 2018. <https://energyplan.ny.gov/Plans/2015.aspx>.

⁷ Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard, Case 15-E-0302, “Order Adopting a Clean Energy Standard,” issued and effective August 1, 2016. Accessed July 12, 2018. <https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Standard/Important-Orders-Reports-and-Filings>.

⁸ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Page 10. September 2017. Revised December 2017.

measures, identifies infrastructure requirements, and identifies workforce opportunities. The Master Plan is supported by 20 appended studies prepared by or for New York on the subjects of marine wildlife, the ocean floor and benthic environment, birds and bats, environmental sensitivity and risk analysis, fish and fisheries, marine mammals and sea turtles, metocean (wind, waves, and current), sand and gravel, aviation and radar, grid connection, health and safety, shipping and navigation, marine archaeology and cultural resources, onshore permitting constraints, marine recreational uses, visual impacts, pipelines and cables, ports and supply chain, jobs and economic benefits, vessels, and project cost projections. These studies provide a wealth of information concerning a variety of environmental, social, economic, regulatory and infrastructure-related issues implicated in planning for the State's offshore wind energy future. Collectively, these studies inform New York's assessment of the most efficient and least impactful means to achieve its goals for offshore wind energy development.

Throughout the two-year Master Planning process, New York conducted an unprecedented and extensive offshore wind energy public outreach campaign. New York's Outreach and Engagement Plan⁹ solicited early and frequent input from a wide group of stakeholders and interested parties. In addition to hosting seven widely-publicized public information sessions throughout the region, New York identified and regularly consulted with coastal, maritime, and fishing communities; labor and business organizations; private industry; governmental entities and elected officials; non-governmental organizations, including environmental groups; and ratepayer advocates. Drafts of all Master Plan studies were provided to multiple and diverse entities, including BOEM, and New York considered the concerns and input provided by all stakeholders throughout its planning process.

The 20 Master Plan studies and extensive outreach give New York, BOEM, New Jersey and other States and stakeholders unparalleled insight into how present-day conditions and potential concerns can best be balanced when advancing potential future offshore wind development in the New York Bight. With that information, New York undertook a comprehensive analysis of the OSA, and identified the Area for Consideration as best suited for wind energy development because it presents the fewest conflicts with ocean users, resources, infrastructure, and wildlife. The data also show that the Area for Consideration has the greatest potential for cost-effective development of offshore wind energy to meet the State's renewable energy goals.

⁹ NYSERDA. 2017. Appendix W: *New York State Offshore Wind Master Plan Outreach and Engagement Summary*. NYSERDA Report 17-25w.

2.2 Leasing Under the Call Should Be Sited Within the Area for Consideration Because There is Sufficient Capacity to Meet Current Regional Renewable Energy Goals and a Phased Approach Would Maximize Leasing Revenue

The Call seeks input regarding lease areas and size, and BOEM’s regulations indicate that “the area required to accommodate the anticipated activities” is a relevant factor for identifying lease areas.¹⁰ The Area for Consideration, together with existing lease areas, can accommodate enough wind energy development to competitively and cost-effectively satisfy the current regional goals for offshore wind energy. New York and New Jersey’s 2030 goals combine to equal 5,900 MW of installed capacity. Existing executed lease areas off the coast of New York and New Jersey contain approximately 423,183 acres, capable of supporting at least 4,230 MW of installed offshore wind generation capacity.¹¹ Assuming the existing leases are fully developed, an additional 1,670 MW of capacity would need to be installed off the coasts of New York and New Jersey to reach the States’ goals. New York’s Area for Consideration document shows numerous ways in which multiple WEAs can be sited within the Area for Consideration to exceed New York’s 2,400 MW goal. It therefore accommodates the incremental need and ensures that adequate competition among project developers will exist to fulfill the existing demand from New York and New Jersey. The installation goals of New England states can be easily accommodated through existing leases off the coasts of Rhode Island and Massachusetts, which total more than 519,159 acres, thus reducing the likelihood of these states procuring from the New York Bight.¹²

Moreover, the State believes that BOEM should consider this Call as a step in a larger process of prioritizing potential lease areas in the New York Bight. By keeping new lease areas under this Call within the Area for Consideration, competitive interest will be concentrated in the areas most likely to be developed with the fewest obstacles. Once initial lease areas are developed, OCS areas not already leased should experience a concomitant increase in value. Thus, it can be anticipated that if demand warranted development beyond the Area for Consideration, the U.S. government could receive greater revenue if it phases leasing opportunities by prioritizing more suitable portions of the Call Areas now. This phased approach to leasing is consistent with the regulatory mandate that BOEM assess lease size “in a manner

¹⁰ 30 C.F.R. § 585.206(a).

¹¹ BOEM. 2018. *Outer Continental Shelf Renewable Energy Leases Map Book*. June 2018. Pages 8-10. Accessed July 11, 2018. <https://www.boem.gov/Renewable-Energy-Lease-Map-Book/>.

¹² All leases are in federal waters and thus are regional resources. The South Fork project, for example, is located in the Rhode Island / Massachusetts lease block but is delivering power to New York. 3,200 MW of incremental lease capacity is sufficient to ensure that all regional goals can be competitively met.

that is consistent with the provisions of this part,” including, inter alia, maximizing the economic benefits of the OCS and providing a fair return to the United States.¹³ In addition, the recognition that areas outside of the Area for Consideration still could be subject to a future Area Identification process is consistent with regulations providing that BOEM should consider the leasing schedule when assessing lease areas.¹⁴

¹³ 30 C.F.R. § 585.206(b); 30 C.F.R § 585.102(a)(5), (8).

¹⁴ 30 C.F.R § 585.102(a)(10).

3 Response to Requested Information in Call

In section 7 of the Call, BOEM “requests specific and detailed comments from the public and other interested or affected parties” regarding fourteen topics. As noted, New York has spent the last three years gathering data, undertaking extensive stakeholder outreach, and comprehensively analyzing the suitability of, and the potential conflicts from, offshore wind energy development in the New York Bight. Drawing upon that breadth and depth of information, New York hereby responds to certain topics that BOEM requested information about. In the interest of economy, multiple topics are addressed in a single response where possible.

3.1 Geological, Geophysical and Biological Conditions (Topic #1), Biologically Important Areas (Topic #13), and Habitats that May Require Special Attention during Siting and Construction (Topic #12)

This section summarizes geological, geotechnical, and biological conditions within the OSA. It also presents the conditions of the biologically valuable areas for marine mammals and sea turtles, fish, and birds. Areas are considered valuable if they may be vital for migration, breeding, foraging, or other biologically important behaviors, or if they may seasonally concentrate species in high numbers. This section also describes areas valuable to species listed under the Endangered Species Act (“ESA”). The information presented is based on studies conducted for the Master Plan and new data that became available after the Master Plan studies were completed. The studies and new information described below are consistent with and reinforce the data and analysis that underlie the Area for Consideration.

Geophysical, Geotechnical, and Benthic. The New York State Offshore Wind Master Plan analysis of Multibeam Echo Sounder (“MBES”) and Benthic Survey Data study provided planning-level characterization of the geological (sediment size and type), geotechnical (density of bottom), and benthic (animal habitat) characteristics, based on surveys undertaken within the four BOEM Call Areas. High resolution imagery acoustic data (MBES)^{15,16} provided landscape-level assessment of the distribution of large and small wavelength and amplitude bedforms, changes in slope, and the presence of unique

¹⁵ MBES data included a total of 2,498 linear nautical miles of bottom seafloor bathymetry; relative hardness of the seafloor, measured as intensity or backscatter; and limited water column anomaly data based on on-board review of MBES data during acquisition for presence of likely water column anomalies (pelagic assemblages of fish, methane plumes, archaeological sites such as wrecks with rigging, etc.).

¹⁶ NYSERDA. 2017. Appendix A: *New York State Offshore Wind Master Plan Analysis of Multibeam Echo Sounder and Benthic Survey Data*. NYSERDA Report 17-25a. Figure 40, page 70. December 2017. The map shows the location of sampling sites and survey results.

features. The SPI/PV optical survey provided small-scale visual evidence of surface substrata and biotic communities.¹⁷ The interpretations of surface sediments and benthic biological communities presented in this study are believed to be representative of the four BOEM Call Areas, given the survey design and collection of images across a range of seafloor features and textures. Results show that no sensitive hard-bottom habitats were identified within the four Call Areas by the acoustic (landscape level) or optical (small-scale assessments) data collected. Hard-bottom habitats with attached epifauna and flora are viewed as potentially valuable and sensitive because they often provide stable and protected environments for spawning and residence of juvenile fish, shellfish, and lobster, they are ideal locations for squid to lay their eggs, and because impacts are often longer for recovery and restoration of native flora and fauna when compared to softer habitats.

Biologically Valuable Areas: Marine Mammals and Sea Turtles. The New York State Offshore Wind Master Plan Marine Mammal and Sea Turtle Study¹⁸ reviews a variety of historical data and recent distribution and habitat-use data collected through extensive surveys conducted over the last 26 years. This comment letter considers those data and new data that have become available since the writing of the Master Plan. The purpose of the Marine Mammal and Sea Turtle Study was to examine the occurrence of marine mammals and sea turtles within the OSA and the potential sensitivities of species and species groups to offshore wind development. Temporal and spatial distribution of different species and the variable sensitivity to potential stressors can inform siting and minimization of effects on marine mammals and sea turtles. Since that study was completed, additional relevant data have been released, including additional high-resolution photography aerial surveys for marine mammals and sea turtles in

¹⁷ SPI/PV surveys were conducted to: ground-truth acoustic data, primarily backscatter, with regard to physical characteristics of the seafloor; characterize the benthic biotic communities observed; and provide a screening-level evaluation of benthic habitats within the surveyed area in terms of suitability for offshore wind farm construction.

¹⁸ NYSERDA. 2017. Appendix L: *New York State Offshore Wind Master Plan Marine Mammals and Sea Turtles Study*. NYSERDA Report 17-25L. November 2017.

each season of 2017^{19,20,21,22} and new models of North Atlantic right whale habitat-based density predictions.²³ The new survey data and new models are described below. The conclusions to be drawn from all of the available information, which includes decades of observations, are that marine mammals occur throughout the OSA, and that the majority of marine mammal species are most likely to occur at high concentrations throughout most of the year in the following areas:

- The higher-productivity areas of the continental shelf break and slope (between North and South Hudson Call Areas),
- The Hudson Shelf Valley and the Hudson Canyon (between North and South Hudson Call Areas), and
- Areas along the coast where endangered North Atlantic right whales, fin whales, humpback whales and harbor seals use habitat (out to approximately 30 miles from shore) (including the North and South Fairways Call Areas and the western part of the North and South Hudson Call Areas).

Additionally, the Marine Mammal and Sea Turtle Study found that in the northeastern portion of the OSA, which overlaps with the Fairways North Call Area, harbor porpoises, fin whales, and other non-endangered baleen whales are predicted to occur at higher densities than in the rest of the OSA at certain times of year, particularly during summer. New models of predicted seasonal use of right whales predict highest densities in winter followed by spring along coastal areas (out to approximately 30 miles from shore) and relatively diffuse use of the continental shelf by very low densities of right whales in summer and fall.

¹⁹ Normandeau and APEM (Normandeau Associates, Inc. and APEM, Inc.). 2017. *Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy Fall 2016 Taxonomic Analysis Summary Report*. Prepared for New York State Energy Research and Development Authority. Accessed July 12, 2018. https://remote.normandeau.com/docs/NYSERDA%20Fall%202016_Taxonomic%20Analysis%20Summary%20Report.pdf.

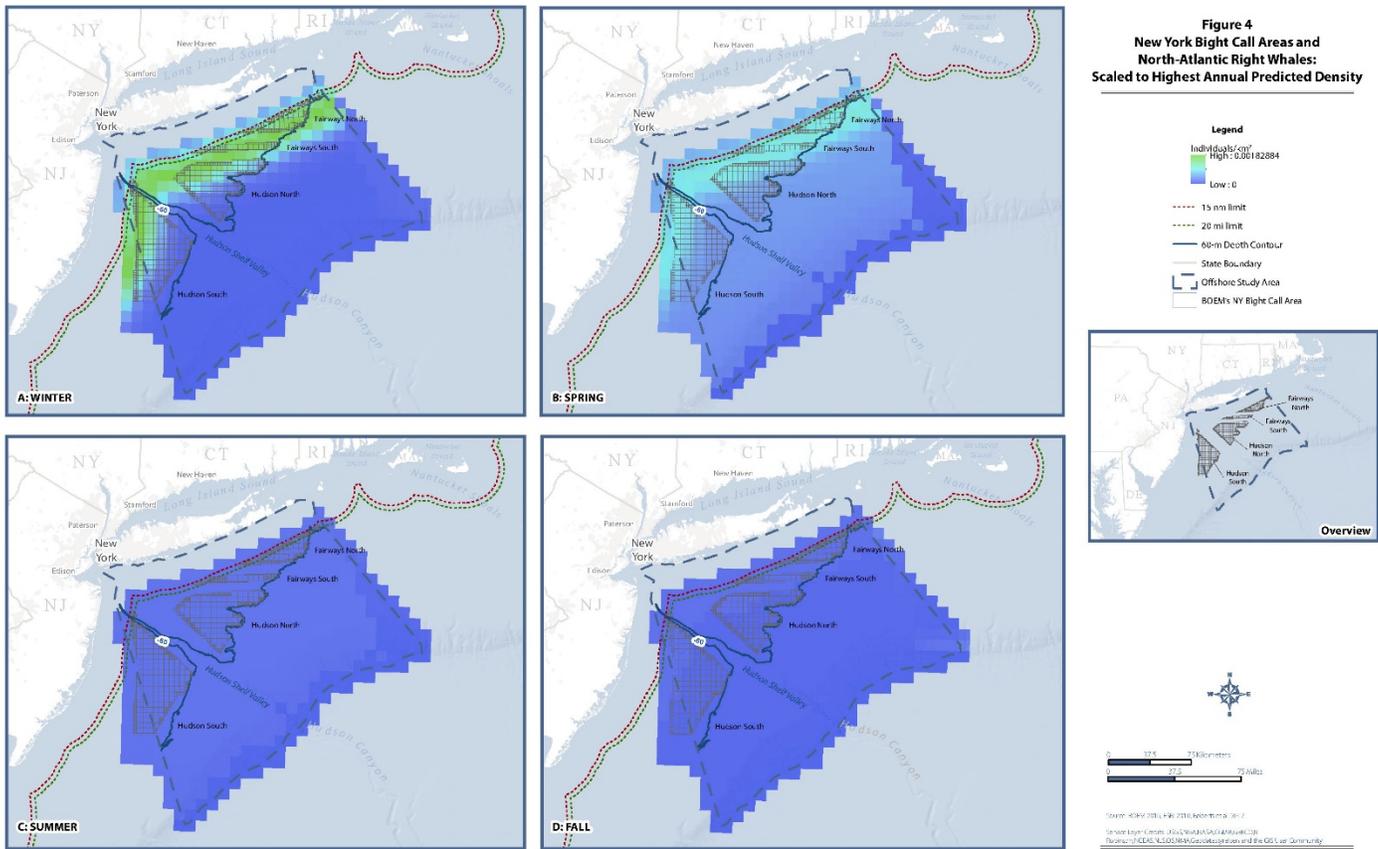
²⁰ Normandeau and APEM (Normandeau Associates, Inc. and APEM, Inc.). 2017. *Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy Winter 2017 Taxonomic Analysis Summary Report*. Prepared for New York State Energy Research and Development Authority. Accessed July 12, 2018. https://remote.normandeau.com/docs/NYSERDA%20Winter%202017_Taxonomic%20Analysis%20Summary%20Report.pdf.

²¹ Normandeau and APEM (Normandeau Associates, Inc. and APEM, Inc.). 2018. *Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy Summer 2017 Taxonomic Analysis Summary Report*. Prepared for New York State Energy Research and Development Authority. Accessed July 12, 2018. https://remote.normandeau.com/docs/NYSERDA_SUMMER%202017_Taxonomic_Analysis_Summary_Report.pdf.

²² Normandeau and APEM (Normandeau Associates, Inc. and APEM, Inc.). 2018. *Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy Fall 2017 Taxonomic Analysis Summary Report*. Prepared for New York State Energy Research and Development Authority. Accessed July 12, 2018. https://remote.normandeau.com/docs/NYSERDA_Fall_2017_Taxonomic_Analysis_Summary_Report.pdf.

²³ Roberts, J.J., Mannocci, L., Halpin, P.N. 2017. *Final Project Report: Marine Species Density Data Gap Assessments and Update for the AFTT Study Area, 2016-2017* (Opt. Year 1), Document version 1.4. Report prepared for Naval Facilities Engineering Command, Atlantic by the Duke University Marine Geospatial Ecology Lab, Durham, NC.

General seasonal distributions of marine mammals and sea turtles are summarized in Section 4 on page 72 of the Marine Mammal and Sea Turtle Study. The more recent North Atlantic right whale density models and sea turtle surveys warrant some adjustments to the Study’s conclusions. For example, the prior models for North Atlantic right whales predicted lower densities of this species along the coastal areas of Long Island and New Jersey in winter and spring. The new models include areas closer to the coast which were not modeled in the original models (i.e., no data were presented in some coastal areas in the original model). The best available data indicate that the areas of highest density for North Atlantic right whales in winter and spring cover all of the North and South Fairways Call Areas, but only part of each of the North and South Hudson Call Areas.



For sea turtles, the Marine Mammals and Sea Turtles Study includes density maps from 2007,²⁴ the most recent density maps available. These maps suggest some tendency for sea turtles to occur in higher densities in the southern part of the OSA. The Marine Mammals and Sea Turtles Study points out that the 2007 models were contradicted by preliminary observations of sea turtles in high-resolution photography-based aerial surveys in 2016,²⁵ particularly observations of loggerhead sea turtles throughout the OSA in summer. Data from additional aerial surveys in 2017 concur with the 2016 observations that loggerhead turtles occur throughout the OSA in summer, and other sea turtle species also show relatively widespread use of the OSA in summer, though in lower densities than loggerhead sea turtles. Thus, new data suggest that current sea turtle use in the OSA is widespread and therefore, sea turtle distribution data are not useful for identifying Call Areas with relatively more or less potential impact.

As described in the Master Plan, the predicted high densities of marine mammals in the northeastern corner of the OSA and throughout the Hudson Shelf Valley indicate biological sensitivity of the Fairways North Call Area and the boundaries of the Hudson North and Hudson South Call Areas along the Hudson Shelf Valley. In the Area for Consideration document, New York proposes that new WEAs include a 2-nm setback from the Hudson Shelf Valley, in order to, inter alia, avoid the areas of highest densities of marine mammals. The new models also show that the areas of highest density for North Atlantic right whales in winter and spring cover all of the North and South Fairways Call Areas, but only part of each of the North and South Hudson Call Areas.

Finally, New York State Department of Environmental Conservation (“NYSDEC”) has expressed concerns that the development of new WEAs in Fairways South could adversely impact marine mammals. If the Fairways South Call Area is fully developed for offshore wind, it would take up the sea area between two shipping fairways. Baleen whales migrating north or south through the Bight would therefore have to cross a shipping fairway, followed by a wind farm, followed by another shipping fairway. This route could potentially put marine mammals at increased risk of ship strike.

²⁴ Navy (U.S. Department of the Navy). 2007. *Navy OPAREA Density Estimate (NODE) for the Northeast OPAREAs*. Prepared for the Department of the Navy, U.S. Fleet Forces Command, Norfolk, Virginia. Contract No. N62470-02-D-9997, CTO 0030. Prepared by Geo-Marine, Inc., Hampton, Virginia.

²⁵ Normandeau and APEM (Normandeau Associates, Inc. and APEM, Inc.). 2016. *Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy Summer 2016 Taxonomic Analysis Summary Report*. Prepared for New York State Energy Research and Development Authority. Accessed July 12, 2018. https://remote.normandeau.com/docs/NYSERDA%20Summer%202016_Taxonomic%20Analysis%20Summary%20Report_final%20Updated.pdf.

Fish. The New York State Offshore Wind Master Plan Fish and Fisheries Study²⁶ examines fish species, distributions, and abundance in the OSA, along with their relative sensitivity to potential offshore wind development. This study was informed by data sources from State and Federal agencies, regional fisheries councils and commissions, academic institutions, and non-governmental organizations. Data gathered for the study shows that fish biomass tends to be highest along the coast, with a general increasing pattern of biomass density moving across the OSA from the southwest to the northeast, and highest relative densities overlapping with the Fairways North Call Area.^{27,28,29} Additionally, the State’s Environmental Sensitivity Analysis³⁰ predicts a high concentration of fish species within the cold water upwelling areas of the Hudson Shelf Valley year round, which coincides with the fact that predators, such as marine mammals and birds, forage in the Hudson Shelf Valley. The Fish and Fisheries Study confirms that the OSA lies within designated offshore essential fish habitat (Essential Fish Habitat for 47 species in the Atlantic Ocean (see Table 2 [page 18] of the Fish and Fisheries Study, and Table 4 [page 38] of the Area for Consideration document).^{31,32,33,34} The number of species with identified Essential Fish Habitat in a given area is largest in the northeastern corner of the OSA within the Fairways North Call Area; a smaller number of species are fairly consistently spread across most of the remaining OSA.³⁵

²⁶ NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. November 2017.

²⁷ Curtice, C., J. Cleary, E. Shumchenia, and P.N. Halpin. 2016. *Marine-life Data and Analysis Team (MDAT) technical report on the methods and development of marine-life data to support regional ocean planning and management*. Accessed July 12, 2017. http://seamap.env.duke.edu/models/MDAT/MDAT-Technical-Report-v1_1.pdf.

²⁸ Fogarty, M. & Perretti, C. 2016. *Distribution and biomass data for fish species along the U.S. east coast from about Cape Hatteras north to Canadian waters, created by the Northeast Fisheries Science Center for the Northeast Regional Ocean Council*. Accessed July 12, 2018. <http://www.northeastoceandata.org/data-explorer/?fish>.

²⁹ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 14, page 40. September 2017. Revised December 2017.

³⁰ NYSERDA. 2017. Appendix I: *New York State Offshore Wind Master Plan Environmental Sensitivity Analysis*. NYSERDA Report 17-25i. Figure 19, page 62. November 2017.

³¹ NOAA Fisheries n.d. “Essential Fish Habitat Mapper.” Accessed July 12, 2018. <http://www.habitat.noaa.gov/protection/efh/efhmapper/>.

³² NOAA Fisheries GARFO. n.d. *Guide to Essential Fish Habitat Designations in the Northeastern United States*. Accessed July 12, 2018. <https://www.greateratlantic.fisheries.noaa.gov/hcd/index2a.htm>.

³³ NOAA Fisheries GARFO. n.d. “Essential Fish Habitat Designations for New England Skate Complex.” Accessed July 12, 2018. <https://www.greateratlantic.fisheries.noaa.gov/hcd/skateefhmaps.htm>.

³⁴ The Nature Conservancy and NOAA. 2015. Essential Fish Habitats. MARCO Mid-Atlantic Ocean Data Portal. Accessed July 12, 2018. <portal.midatlanticocean.org>.

³⁵ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 15, page 40. September 2017. Revised December 2017.

Birds.³⁶ The New York State Offshore Wind Master Plan Bird and Bat Study³⁷ focuses on the bird species in the OSA that have the greatest sensitivities to offshore wind energy development, i.e., regularly occurring species (as a whole) and special status species. The Bird and Bat Study concludes that, while birds may occur anywhere in the OSA annually, the highest relative abundance of regularly-occurring species is in the following core areas:^{38,39}

- Higher-productivity areas of the continental shelf break and slope;
- The Hudson Shelf Valley and Hudson Canyon (includes portions of the Hudson South Call Area, specifically Site 5); and
- Shallower waters along the northern and northwestern boundaries of the OSA.

Relative use of the OSA varies by season. In the winter, overall annual avian relative-abundance hotspots were modeled as variable throughout the OSA, with apparent trends of higher relative abundance along the Hudson Shelf Valley (overlapping with portions of the Hudson South Call Area), in nearshore waters, and in central portions of the OSA.⁴⁰ In the spring, the overall avian relative abundance hotspot model shows concentrations of use in central portions of the OSA at water depths of 660 feet (200 meters). The summer overall avian relative abundance hotspot model displays abundance as highest in nearshore waters with depths of 200 feet (60 meters) or less. The fall overall avian relative abundance hotspot model displays abundance as higher in waters with depths of 200 feet (60 meters) or less but also along the eastern portion of the OSA.

³⁶ There were insufficient data to identify higher-use areas for bats in the OSA. Based on the data available, bat occurrence in offshore waters in general appears to be relatively low and concentrated during migratory periods. Available data come from:

Stantec Consulting Services, Inc. (Stantec). 2016. *Long-term Bat Monitoring on Islands, Offshore Structures, and Coastal Sites in the Gulf of Maine, Mid-Atlantic, and Great Lakes – Final Report*. Prepared for the U.S. Department of Energy. January 15, 2016. Accessed July 12, 2018. <https://tethys.pnnl.gov/sites/default/files/publications/Stantec-2016-Bat-Monitoring.pdf>.

³⁷ NYSERDA. 2017. Appendix D: *New York State Offshore Wind Master Plan Birds and Bats Study*. NYSERDA Report 17-25d. November 2017.

³⁸ Curtice, C., J. Cleary, E. Shumchenia., P.N. Halpin. 2016. *Marine-life Data and Analysis Team (MDAT) Technical report on the methods and development of marine-life data to support regional ocean planning and management*. Prepared on behalf of the Marine-life Data and Analysis Team (MDAT): Accessed July 12, 2018. http://seamap.env.duke.edu/models/MDAT/MDAT-Technical-Report-v1_1.pdf.

³⁹ NYSERDA. 2017. Appendix D: *New York State Offshore Wind Master Plan Birds and Bats Study*. NYSERDA Report 17-25d. Page 14. November 2017.

⁴⁰ Menza, C., B.P. Kinlan, D.S. Dorfman, M. Poti and C. Caldwell (eds.). 2012. *A Biogeographic Assessment of Seabirds, Deep Sea Corals and Ocean Habitats of the New York Bight: Science to Support Offshore Spatial Planning*. NOAA Technical Memorandum. NOS NCCOS 141. Silver Spring, MD. Accessed July 12, 2018. <https://tethys.pnnl.gov/sites/default/files/publications/Menza-et-al-2012.pdf>.

To date, Normandeau Associates, Inc. has collected over a year of bird use data specific to the OSA,⁴¹ including observations that can be used to evaluate whether and how federally listed species and/or species of special concern use the OSA. Upon its completion, the final data analysis and study will increase understanding of annual and seasonal bird use and the potential impacts in the OSA. Review of the raw data from Normandeau Associates, Inc. appears to support the avian use trends reported in the Bird and Bat Study. Migratory pathways, combined with risk factors like collision vulnerability, are factors to consider in offshore wind project siting and development. Vulnerability can be affected by distribution as well as physiology/behavior, including flight height and maneuverability.

Based on the best available data, the predicted high densities of birds throughout the Hudson Shelf Valley indicate biological sensitivity of the boundaries of the Hudson North and Hudson South Call Areas (Site 5 in Figure 3) along the Hudson Shelf Valley. In order to avoid this area of high use by birds, New York proposed that new WEAs within the Area for Consideration include a 2-nm setback from the Hudson Shelf Valley.

Habitats that may require special attention during siting and construction. The 150-kilometer (km) long Hudson Shelf Valley bisects the New York Bight region, extending from the Christiansen Basin at a water depth of about 100 feet (30 meters) to the head of the Hudson Canyon at a water depth of about 275 feet (85 meters). It provides habitat for a high concentration of fish, bird, and marine mammal species. The New York State Offshore Wind Master Plan Birds and Bats Study, Environmental Sensitivity Analysis,⁴² and Marine Mammals and Sea Turtles Study include figures that identify the Hudson Shelf Valley as core habitat for these marine species. Therefore, the Hudson Shelf Valley should be considered a sensitive area during siting and construction. The Hudson South Call Area borders the Hudson Shelf Valley as depicted in Figure 5. New York State issued a 2-nm ecological setback from the Hudson Shelf Valley to minimize potential effects to this sensitive core habitat for a biodiverse group of species.

In addition to the Hudson Shelf Valley, other habitats within the OSA, including the northeastern corner and coastal areas, are also known to have increased species diversity, across several species groups. Data

⁴¹ Normandeau Associates, Inc. (Normandeau). 2018. *Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy*. Accessed July 12, 2018. https://remote.normandeau.com/nys_overview.php.

⁴² NYSERDA. 2017. Appendix I: *New York State Offshore Wind Master Plan Environmental Sensitivity Analysis*. NYSERDA Report 17-25i. November 2017. Figure 19 depicts 15 raster maps displaying overall environmental sensitivity results for marine mammals, birds, and fish (essential fish habitat and fish core biomass data) within the OSA. Results show core areas with overall wildlife abundance to be along the Hudson Shelf Valley, on the continental shelf, and in the northeastern portion of the OSA during construction in the spring.

gathered for the Master Plan shows increased occurrence of marine mammal and fish species in the northeast section of the OSA, overlapping with the Fairways North Call Area. Fish biomass tends to be highest along the coast and shows a general increasing pattern moving across the OSA from the southwest to the northeast, with highest relative densities overlapping with the Fairways North Call Area.⁴³ In the northeastern portion of the OSA, which overlaps with the Fairways North Call Area, harbor porpoises, endangered North Atlantic right whales and fin whales, and other baleen whales are predicted to occur at relatively high densities, particularly during summer. Additionally, according to information gathered during meetings with fishing stakeholders, the eastern OSA appears to pose the greatest concern to the highest number of individual fishers. Numerous fishers engaged during the Master Plan process commented that the eastern OSA areas are heavily used and transited by vessels originating from ports in New York, Rhode Island, Massachusetts, Connecticut, New Jersey and other regional states representing diverse fisheries, particularly in depths between 120-300 feet (35-90 meters).^{44,45,46,47}

⁴³ NYSERDA. 2017. *Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 14, page 40. September 2017. Revised December 2017.

⁴⁴ NYSERDA. 2017. *Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 18, page 43. September 2017. Revised December 2017.

⁴⁵ NYSERDA. 2017. Appendix J: Fish and Fisheries Study. NYSERDA Report 17-25j. Section 5.2.1.2, pages 94-121. November 2017.

⁴⁶ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 18, page 43. September 2017. Revised December 2017.

⁴⁷ NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Section 5.2.1.2, pages 94-121. November 2017.

regarding onshore historic properties that may be affected by potential visual impacts from offshore wind energy development in primarily Fairways North and Fairways South, and a portion of Hudson North.

New York notes that additional site-specific underwater and terrestrial cultural resource investigations may be necessary for offshore wind energy development projects proposed within any of BOEM's Call Areas. New York also recommends that BOEM consult with all 22 Indian tribes to identify any resources, issues, or concerns, considering the Call Areas locations and BOEM's tribal consultation responsibilities.⁴⁹

Tribal Resources. The Cultural Resources Study summarizes New York's outreach with the 12 federally- and State-recognized Indian tribes located in New York regarding their potential interest in the OSA, in keeping with New York's regulatory jurisdiction that is limited to New York State lands. However, given BOEM's regulatory jurisdiction over offshore wind development on the OCS, New York has identified 10 additional federally- or State-recognized Indian tribes that may have an ancestral or historical interest in terrestrial or submerged lands of New Jersey or Rhode Island, or the marine environment of the OCS, as these tribes may have resources that could potentially be affected by offshore wind energy development within the Call Areas. These Indian tribes consist of seven federally-recognized Indian tribes (Absentee-Shawnee Tribe of Indians of Oklahoma, Mashantucket Pequot Indian Tribe, Mashpee Wampanoag Tribe, Mohegan Tribe of Indians of Connecticut, Narragansett Indian Tribe, Shawnee Tribe,

⁴⁹ Such investigations would need to be implemented in accordance with BOEM guidance and the outcome of project-specific consultation under Section 106 of the National Historic Preservation Act, and/or government-to-government tribal consultation in accordance with Executive Order 13175. With regard to tribal resources, developers must comply with Section 106 of the NHPA and its implementing regulations at 36 CFR Part 800 and pursuant to Executive Order 13175.

and Wampanoag Tribe of Gay Head [Aquinnah]) and three State-recognized (New Jersey) Indian tribes (Naticoke Lenne Lenape Indians, Powhatan Renape Nation, and Ramapough Mountain Indians).⁵⁰

Terrestrial Cultural Resources. The Call requests “[i]nformation regarding the identification of historic properties or potential effects to historic properties from leasing, site assessment activities ... or commercial wind energy development in the areas identified in the Call,” including “onshore historic properties that could potentially be affected by renewable energy activities within the Call Areas.” Based on the New York State Offshore Wind Master Plan Visual Threshold Study, discussed in further detail below, New York concludes that any offshore wind development built within 20 miles from shore, may be more than minimally visible from onshore architectural or built resources, including those that are historic properties, and other cultural resources. Thus, offshore wind projects within 20 miles from shore may affect the setting of these cultural resources and historic properties, or their views and viewsheds, and could have adverse effects on such resources if setting, views, and/or viewsheds are character-defining features that contribute to the significance of a particular terrestrial cultural resource.⁵¹

To address BOEM’s request for comments regarding historic properties that have the potential to be visually affected or impacted by offshore wind energy development in the Call Areas, New York obtained National Register of Historic Places (“NRHP”)-listed historic properties data for portions of the New York, New Jersey, and Rhode Island shorelines that are within 20 miles of any of the four BOEM Call Areas. (BOEM’s 2015 *Renewable Energy Viewshed Analysis and Visualization Simulation for the New*

⁵⁰ National Council of State Legislatures. 2018. Federal and State Recognized Tribes. Accessed July 12, 2018. <http://www.ncsl.org/research/state-tribal-institute/list-of-federal-and-state-recognized-tribes.aspx#State>.
National Park Service (NPS). 2017. National NAGPRA Online Databases: Native American Consultation Database: Richmond, Kings, Queens, Nassau, and Suffolk Counties. Accessed July 12, 2018. <https://www.nps.gov/nagpra/onlinedb/index.htm>.
NPS. 2017. National NAGPRA Online Databases: Native American Consultation Database: New York State. Accessed July 12, 2018. <https://www.nps.gov/nagpra/onlinedb/index.htm>.
NPS. 2017. National NAGPRA: Indian Land Cessions 1784-1894. Accessed July 12, 2018. https://www.nps.gov/nagpra/ONLINEDB/Land_Cessions/INDEX.HTM.
State of New Jersey. 2016. Commission on American Indian Affairs. Accessed July 12, 2018. http://www.nj.gov/state/dos_statutes-american-indian-affairs.shtml.
Thomson Reuters. 2017. New York Consolidated Laws, Indian Law - IND § 2. New York Consolidated Laws, state Indian nations and tribes. Accessed July 12, 2018. <http://codes.findlaw.com/ny/indian-law/ind-sect-2.html>.
United States Department of Housing and Urban Development. 2017. Tribal Directory Assessment Tool. Accessed July 12, 2018. <https://egis.hud.gov/tdat/>.
United States Department of Housing and Urban Development. 2018. Tribal Directory Assessment Tool. Accessed July 12, 2018. <https://egis.hud.gov/tdat/>.

⁵¹ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. December 2017.

York Outer Continental Shelf Call Area: Compendium Report,⁵² indicates that cultural resources and historic properties in shoreline areas of New York, New Jersey and Rhode Island could also be affected by offshore wind projects in BOEM’s Call Areas.)

Data for the locations of NRHP-listed historic properties, including National Historic Landmarks (“NHLs”), were obtained from National Park Service databases, and confirmed per databases maintained by the New York State Office of Parks, Recreation, and Historic Preservation (“NYSOPRHP”), New Jersey Historic Preservation Office (“NJHPO”), and Rhode Island Historic Preservation & Historical Commission (“RIHPHC”).⁵³ While New York recognizes that NRHP-eligible cultural resources are also considered historic properties, locational information for NRHP-eligible historic properties is not available in NYSOPRHP, NJHPO, or RIHPHC databases. Information for NRHP-eligible historic properties would need to be obtained separately as part of any project-specific cultural resource investigation conducted in the future for a specific offshore wind project in the BOEM Call Areas.

New York’s research indicates that 30 known and previously-recorded NRHP-listed historic properties are located near the shorelines of Long Island, New York, Block Island, Rhode Island, and New Jersey in locations where offshore wind energy projects could be developed in a Call Area and within 20 miles of the resource. This analysis does not reach a conclusion as to whether setting or viewshed contribute to the significance of these resources or whether the setting would be adversely affected, but rather presents a

⁵² Bureau of Ocean Energy Management. 2015. *Renewable Energy Viewshed Analysis and Visualization Simulation for the New York Call Area*. Accessed July 12, 2018. <https://www.boem.gov/New-York-Visual-Simulations/>.

⁵³ National Park Service. 2018. National Register of Historic Places Program: Research - Data Downloads. Accessed July 12, 2018. https://www.nps.gov/nr/research/data_downloads.htm.

National Park Service. 2018. National Historic Landmarks Listed by State or Territory: New York, New Jersey, and Rhode Island. Lists updated: January 2017. Accessed July 12, 2018. <https://www.nps.gov/nhl/find/statelists.htm>.

NYSOPRHP. 2018. Cultural Resources Information System. Accessed July 12, 2018. <https://cris.parks.ny.gov/Login.aspx?ReturnUrl=%2f>.

New Jersey Historic Preservation Office. 2018. New Jersey and National Register Listings: Monmouth and Ocean Counties. Accessed July 12, 2018. http://www.state.nj.us/dep/hpo/1identify/nrsr_lists.htm.

New Jersey Historic Preservation Office. 2008. New Jersey National Historic Landmarks. Accessed July 12, 2018. <http://www.state.nj.us/dep/hpo/1identify/nhls.pdf>.

Rhode Island Historic Preservation & Heritage Commission. 2018. National Register: Rhode Island Properties. Accessed July 12, 2018. <http://www.preservation.ri.gov/register/riproperties.php>.

Rhode Island Historical Preservation Commission. 1991. Historic and Architectural Resources of Block Island, Rhode Island. Accessed July 12, 2018. http://www.preservation.ri.gov/pdfs_zips_downloads/survey_pdfs/blockisland.pdf.

Rhode Island Historic Preservation & Heritage Commission. 1991. Historic Landscapes of Rhode Island. Accessed July 12, 2018. http://www.preservation.ri.gov/pdfs_zips_downloads/survey_pdfs/landscapes.pdf.

preliminary magnitude of the resources that have the potential to be affected based on distance to Call Areas alone.

- Site 1 - Fairways North. Due to the proximity of Fairways North to the shorelines of New York and Rhode Island, an offshore wind energy project developed within this Call Area has the potential to affect 16 of the 30 identified NRHP-listed historic properties (15 in New York State and one in Rhode Island) if a project is located within 20 miles of the Long Island or Block Island shorelines and if setting, views, and/or viewsheds are determined to be character-defining features that contribute to the significance of any of these particular terrestrial cultural resources.⁵⁴ (In other words, these 16 resources lie within approximately 20 miles of the landward border of Fairways North.)
- Site 2 - Fairways South. Due to the proximity of the western portion of Fairways South to the shoreline of New York, an offshore wind project developed within this Call Area has the potential to affect five of these NRHP-listed historic properties (all five are in New York State) if the project is located within 20 miles of the Long Island shoreline and if setting, views, and/or viewsheds are determined to be character-defining features that contribute to the significance of any of these particular terrestrial cultural resources.⁵⁵ (In other words, these five resources lie within 20 miles of the landward border of Fairways South.)
- Site 5 - Western edge of Hudson North and eastern edge of Hudson South. Due to the proximity of portions of Site 5 to the New Jersey shoreline, an offshore wind energy project developed within Site 5 has the potential to affect 10 of the 30 NRHP-listed historic properties (all 10 are in New Jersey) if the project is located within 20 miles of the New Jersey shoreline and if setting, views, and/or viewsheds are determined to be character-defining features that contribute to the significance of any of these particular terrestrial cultural resources. (In other words, these 10 resources lie within approximately 20 miles of the landward border of Site 5.)

Additionally, one other terrestrial area, the Fire Island National Seashore, while not a historic property *per se*, may also be considered a cultural resource of which the setting, views, or viewsheds contribute to its national importance. This resource is located along the shoreline of Long Island. Due to the proximity of

⁵⁴ One of these 16 NRHP-listed historic properties is located in an area along the shoreline of Long Island, New York where it could potentially be visually affected by offshore wind projects developed within 20 statute miles of the shoreline in both Site 1 – Fairways North and Site 2 – Fairways South.

⁵⁵ One of these five NRHP-listed historic properties is located in an area along the shoreline of Long Island, New York where it could potentially be visually affected by offshore wind projects developed within 20 miles of the shoreline in both Site 1 – Fairways North and Site 2 – Fairways South.

the western portion of Site 2 – Fairways South, an offshore wind project developed in this Call Area and within 20 miles of the shoreline, could potentially affect the setting of the Fire Island National Seashore.

3.3 Turbine Visibility from Shore Generally (Topic #3)

The Call requests “information relating to ... how far offshore turbines should be placed to minimize the visual impact from the coastline....” Indeed, the visibility and visual impact of wind energy projects is typically a primary issue of concern to the public. Concern over the perceived impacts to scenic landscapes has resulted in the delay or denial of several projects, both on land and offshore. The State therefore prepared, as part of the Master Plan, a Visibility Threshold Study.⁵⁶ The data used in the Visibility Threshold Study informed the Area for Consideration.

Based on evidence from U.S. and European wind farms, the single most influential factor affecting turbine visibility appears to be distance from the viewer. Contrast of the turbines against the background sky, which is affected by cloud cover and time of day, can also have a significant impact on visibility.⁵⁷ The Visibility Threshold Study uses weather data and computer-assisted visual simulations to evaluate the visibility of a hypothetical project of 100 eight-MW turbines offshore of the south shore of Long Island, in a square grid of ten-turbine rows.⁵⁸ The Study finds that turbines of the modeled size (361 feet high/505 feet rotor diameter) would have to be placed a minimum of 35 miles offshore in order for the curvature of the Earth to entirely physically screen the turbines from water-level viewers under optimal visibility conditions.⁵⁹ Since requiring a distance this great in order to eliminate any visibility could seriously inhibit development and limit available area due to depth constraints, the Visibility Threshold Study considers simulations of the hypothetical turbines at five different distances (13.2, 15, 20, 25 and 30 miles), at three different times of day (early morning, midday and late afternoon), and under three

⁵⁶ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. December 2017.

⁵⁷ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 22. December 2017.

⁵⁸ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 22. December 2017.

⁵⁹ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 5. December 2017.

different weather conditions (clear, partly cloudy and overcast).⁶⁰ Overcast sky conditions were predominant, occurring about 61% of the time that visibility was 10 miles or greater.⁶¹

In the simulations created for the Visibility Threshold Study, the portion of the horizon occupied by the hypothetical turbines decreases as distance from shore increases, provided the turbine layout and orientation remain the same.⁶² The simulations show that the 13.2-mile distance zone would have the greatest visibility from shore, and that at a distance of 30 miles, turbines would be nearly indistinguishable regardless of the sky condition, due to the relative size of the turbines and the screening provided by curvature of the Earth.⁶³ Similarly, at 25 miles, even under the highest contrast viewing condition (clear morning), the turbines, although still discernable on the horizon, become an insignificant factor in the view.⁶⁴ At this distance, in order to perceive turbines on the horizon, a viewer likely would have to know the turbines exist or would have to be directed to them.⁶⁵

The Visibility Threshold Study concludes that the perceived differences in scale between the 15-mile and 20-mile scenarios are substantial. Curvature of the Earth becomes a significant factor in turbine visibility beyond 20 miles when viewing from a beach-level position. At this distance, approximately 142 feet of the lower portion of the above-water turbine would be screened by the curvature of the Earth.⁶⁶ In the simulations, at 20 miles distant, the hypothetical project occupies a significantly smaller portion of the horizon than at 15 miles, and the most distant turbines in the layout, which would approach or extend beyond the 25-mile distance, are substantially screened behind the visible horizon by Earth curvature.⁶⁷

⁶⁰ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Pages 13-14. December 2017.

⁶¹ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 18 December 2017.

⁶² NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 22. December 2017.

⁶³ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 22. December 2017.

⁶⁴ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 22. December 2017.

⁶⁵ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 22. December 2017.

⁶⁶ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 27. December 2017.

⁶⁷ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 22. December 2017.

In overcast conditions, which occur the majority of the time, the turbines become very difficult to discern at approximately 20 miles during most times of day.⁶⁸ However, at a minimum distance of 15 miles, with many of the turbines located between 15 and 20 miles from shore, the array is distinctly perceptible during clear sky, partly cloudy, and some overcast sky conditions, to the extent that the blades of the turbines can be discerned.⁶⁹ Projects with turbines set a minimum distance of 20 miles from shore would have many turbines near or at a distance where they would be all but imperceptible even during maximum contrast conditions.⁷⁰

The Visibility Threshold Study concludes that daytime visual impacts would be negligible when turbines are placed at a distance of 25 miles and beyond, and minimal at a distance of 20 miles from shore. Impacts would be greater for turbines at distances closer than 20 miles.⁷¹ Based on the Visibility Threshold Study and other information, New York concluded that development of wind energy projects at a distance greater than 20 miles (17.4nm) from shore would minimize visual impacts to a practicable degree in light of existing technology.⁷²

Whether or not BOEM adopts New York's recommendation that future WEAs start at 20 miles from the shore, New York expects that a project-specific visualization study will be required to determine project-specific impacts during the approval process for any particular project. While turbines located more than 20 miles from shore are not likely to be visible a majority of the time, project-specific design characteristics may also affect the degree of visual impacts associated with any given project.

⁶⁸ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 23. December 2017. Actual high-resolution photographs taken of the Block Island wind farm from 23 miles away in overcast conditions support the Assessment's conclusions. To most observers (informally interviewed on site when the photographs were taken), the turbines were not readily discernable against the horizon until the observer was guided to the direction and location of the wind farm. See page 26 of the *Visibility Threshold Study*.

⁶⁹ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 22. December 2017.

⁷⁰ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Page 28. December 2017 (discussing negligible visibility of turbines 25 miles and beyond from shore).

⁷¹ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. Pages 27-28. December 2017.

⁷² NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Page 18. September 2017. Revised December 2017.

3.4 Conflicting uses of call areas (Topic #4), Commercial fishing (hotspots), Additional Commercial/Recreational Fishing (Topic #6)

The New York State Offshore Wind Master Plan Fish and Fisheries Study⁷³ reviews available commercial, recreational, and for-hire (e.g., charter) fishery information to determine what is known about the fisheries in the OSA, including the spatial use of the area, the species fished, the common vessel and gear types, and a general understanding of the industry dynamics and relative revenue in the region. The Fish and Fisheries Study reviews recent studies that have synthesized information from these fisheries and mapped spatial fishery information to gain a better understanding of local fisheries and areas of importance. These studies include Vessel Monitoring System (“VMS”) maps, the study *Socioeconomic Impact of Outer Continental Shelf Wind Energy Development on Fisheries in the U.S. Atlantic*, Vessel Trip Report (“VTR” or “Communities as Sea”) maps, the New York Commercial Fishermen Ocean Use Mapping Study, the Mid-Atlantic Regional Council on the Ocean (“MARCO”) Human Use Data Synthesis (“HUDS”), and recreational fishing use area maps for New York and New Jersey. Of all the maps reviewed, the VMS data are often considered to show a more accurate depiction of fishing effort due to the continuous satellite surveillance system.⁷⁴ The speed-restricted VMS data in particular can give an indication of active offshore fishing areas for a given fishery. Although not all vessels and/or fisheries are required to carry VMS, these maps provide baseline information to help identify areas important to various fisheries including multispecies (groundfish), monkfish, herring, scallop, surfclam/ocean quahog, mackerel, and squid. The speed restriction gives an indication of active fishing, and combined with the continuous satellite method of data collection, these maps provide an indication of key areas actively used in recent years by certain fisheries.⁷⁵

To supplement existing maps of fishery data and capture data for fishing vessels that may not be required to carry VMS, a review of Northeast Fishery Observer Program (“NEFOP”) data was completed for the Fish and Fisheries Study. The NYSDEC obtained data from the NOAA Fisheries Northeast Fishery

⁷³ NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. November 2017.

⁷⁴ Rhode Island Department of Environmental Management (RIDEM). 2016. *Rhode Island stakeholder concerns regarding the New York Wind Energy Area*. Prepared by the RIDEM Division of Fish and Wildlife, Marine Fisheries Section. Accessed July 12, 2018. http://www.offshorewindhub.org/sites/default/files/resources/NY_WEA_5-18-16_Meeting_Report_FINAL_0.pdf.

⁷⁵ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 16, page 41. September 2017. Revised December 2017; NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Figure 3, page 43. November 2017. All data layers are also publicly available on the Northeast (<http://www.northeastoceandata.org/>) and Mid-Atlantic (<http://portal.midatlanticocean.org>) ocean data portals.

Science Center for the Fish and Fisheries Study. The NEFOP observers collect catch, gear, fishing effort, and biological data for commercial fisheries from Maine to North Carolina.⁷⁶ Using these data, maps were created for the Fish and Fisheries Study depicting fishing effort aggregated by mobile (trawls, dredges, and purse seines) and stationary (gillnets, hand lines, longlines, pots and traps) gear types. These data are presented as maps which show the number of trips observed in a given grid square for each aggregated gear type. Data included information from all states fishing in the OSA from 2011-2017.⁷⁷ This dataset includes information that is more recent than the other existing maps, such as VMS and the *Socioeconomic Impact* study, which include data through 2014 or earlier. Although NEFOP represents a subsample of the fishing industry data because not all vessels carry observers at any given time, this dataset may capture vessels that are not considered in other studies. The observer data were grouped into mobile and stationary gear types, under the assumption that these gear categories would face different challenges when fishing in or around a wind farm. Additional maps showing observer trips for scallop, squid, clam (both surfclam and ocean quahog), and multi-species bottom trawl are provided as well.⁷⁸

Along with review of existing datasets, New York engaged in extensive outreach directly to the fishing community throughout the multi-year Master Plan process. The State's goal was to gather the most recent information and to work collaboratively with fishing stakeholders to plan for future offshore wind projects in a way that considers potential impacts on fish and fisheries. The State reviewed materials from outreach efforts from previous projects aimed at offshore wind energy development and fisheries executed by other agencies and communicated with State and federal resource managers and project teams to develop an outreach strategy for fish and fisheries. Throughout the Master Planning process, New York has undertaken direct actions to adhere to—and surpass—other studies' recommended planning guidelines and best management practices⁷⁹ designed to actively solicit input from fishery stakeholders early in the planning process.

⁷⁶ NOAA Fisheries. n.d. *Northeast Fisheries Observer Program (NEFOP)*. Accessed July 12, 2018. https://www.nefsc.noaa.gov/fsb/program/NEFOP_Fact_Sheet.pdf.

⁷⁷ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 17, page 42. September 2017. Revised December 2017; NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Figure 6, page 50. November 2017.

⁷⁸ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figures 19-20, pages 44-45. September 2017. Revised December 2017; NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Appendix A, pages A-1 to A-3. November 2017.

⁷⁹ NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Section 6, pages 108-111, and Appendix D, pages D-1 to D-13. November 2017.

New York used a range of notification tools to reach out to the fishing community and appointed a fisheries liaison to communicate directly with stakeholders. The liaison's outreach efforts included over 200 in-person meetings, conference calls, webinars, and stakeholder conversations via email. New York's overall outreach included phone and email correspondence, attendance at State and regional fisheries meetings, site visits to fishing docks, and public meetings.⁸⁰ Notices regarding public meetings were sent through State and regional electronic mailing lists, such as the New York Marine Resources Advisory Council list and the Mid-Atlantic Fishery Management Council list. Notifications regarding the offshore wind master planning process and meetings specifically related to fishery outreach were also provided through New York's offshore wind web page (<https://www.nysesda.ny.gov/offshorewind>).

During many of these outreach efforts, stakeholders were provided with existing maps of fishing data as well as blank maps and charts of the OSA; the stakeholders were invited to use the maps to provide information on areas important for their specific fishery. New York digitally captured these areas and additional data to supplement existing map products.⁸¹ New York also developed scale drawings of standard fishing vessels and mobile gear types for comparison to the minimum expected spacing of future wind turbines in the OSA. These include otter trawls, scallop dredges, and clam dredges. The aim was to provide stakeholders with a better understanding of the area between turbines relative to typical vessel types and gear spreads.⁸² The State also provided fisheries stakeholders with the opportunity to review and comment on the draft Fish and Fisheries Study.⁸³

The information obtained during data analysis and stakeholder outreach show that the OSA contains fishing grounds used by fishing boats landing in New York, New Jersey, Rhode Island, Massachusetts, and elsewhere, including major fishing ports such as Cape May, New Jersey; Point Judith, Rhode Island; and New Bedford, Massachusetts. These vessels target a variety of species, such as scallops, squid, flounders, skates, herring, and clams, and use a variety of fishing gear, including rod and reel, longlines, gillnets, seines, beam trawls, otter trawls, paired midwater and bottom trawls, spears, pots and traps, and

⁸⁰ NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Tables 7 and 8, pages 87-88. November 2017.

⁸¹ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 18, page 43. September 2017. Revised December 2017; NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Figure 8, page 107. November 2017.

⁸² NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Section 2.4.2.2, pages 51-52, and Appendix B, pages B-1 to B-5. November 2017.

⁸³ A list of the stakeholders provided with the draft study and a summary of the comments received are provided in Section 5.2.1.1 [pages 90-93] and summaries of the State's Outreach efforts are presented in Section 5.2 [page 85] of the *New York State Offshore Wind Master Plan Fish and Fisheries Study*: NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. November 2017.

dredges. Additionally, the State reviewed over 50 publicly-available maps to help determine how different fisheries and fishing gear types utilize the OSA and how this data can best be interpreted for selecting sites for offshore wind energy development that least conflict with fishing interests.

Key siting concerns raised by stakeholders during the State's fisheries outreach include:

- The eastern part of the OSA (i.e., the areas including Fairways North and Fairways South) poses the greatest concern to the highest number of individual fishers, based on feedback received during the engagement process. Numerous fishers documented that these areas are heavily used and transited by vessel from diverse fisheries, particularly in depths between 120-300 feet (30-90 meters). Stakeholders also noted that this area also supports some of the greatest diversity of fishery resources related to the number of different fisheries using the area (i.e. commercial, recreational, for-hire industries; various vessel/gear types targeting different fisheries; and number of independent vessels).⁸⁴
- Although there are several active fisheries in the western Call Areas (i.e., Hudson North and Hudson South), including scallop fisheries, fishing stakeholders from various states perceive fewer conflicts in these areas, particularly in the westernmost boundary of Hudson South. VMS data show minimal use of the western area by the monkfish, mackerel, herring, and multispecies (groundfish) fisheries.⁸⁵ The observer data also show fewer observed trips on the western side of the OSA with mobile gear.⁸⁶ Based in part on feedback from the commercial fishing industry, the extension to the western side of Hudson South was included in the Area for Consideration, as many industry stakeholders stated that it presented the least potential for conflict.
- VMS data show the scallop and surf clam fisheries using the western portion of the OSA; however, discussions with stakeholders have noted that less fishing occurs on the western side of the OSA, particularly in depths shallower than 120-300 feet (30-90 meters). Discussion with

⁸⁴ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 18, page 43. September 2017. Revised December 2017; and NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Section 5.2.1.2, pages 94-121. November 2017.

⁸⁵ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 16, page 41. September 2017. Revised December 2017; and NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Figure 3, page 43. November 2017.

⁸⁶ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 17, page 42. September 2017. Revised December 2017; and NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Figure 6, page 50. November 2017.

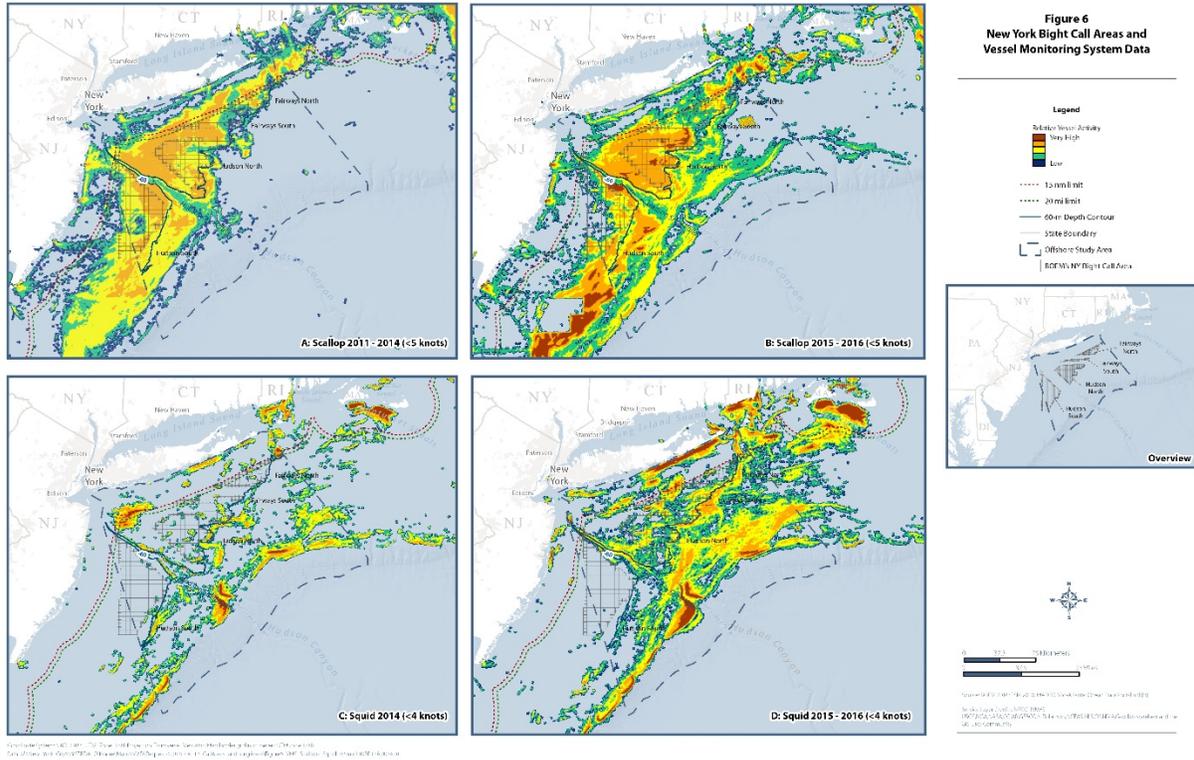
stakeholders⁸⁷ and VMS data show that the central portion of the OSA (i.e., Hudson North) is one of the most heavily fished areas by the scallop industry, however this is also one of the most widely distributed fisheries in the OSA. The State recognizes that there are gradations of fisheries, fishing intensity, fisheries values and numbers of fishers operating within the OSA, including the scallop fishery. BOEM should consider all types of fish and fisheries data, and weigh it against other criteria, when siting and prioritizing WEAs. The State acknowledges that developing offshore wind energy in some areas of the NY Bight and within the Area for Consideration could pose greater potential conflict with scallop fisheries than with other areas. The State believes that the NY Bight should be developed in phases, so that impacts to scallop and other fisheries can be understood; those lessons can then be applied to subsequent development phases, with the goal of minimizing impacts associated with future development. Discussions with stakeholders and observer data also indicate that the areas historically targeted for surf clams in the western portion of the OSA have moved further east and offshore in recent years. This can be seen when comparing the VMS map, which includes data through 2014, to the observer map, which includes data through 2017.

- Many of the fisheries targeted by the commercial fishing community appear to be trending toward deeper waters farther offshore, where cooler water temperatures can be found. As a result, nearer shore waters may present fewer conflicts in the future. Several fishers also cautioned that the Hudson Canyon, Hudson Shelf Valley, and adjacent area were important areas for fishing.⁸⁸
- Since the release of the Area for Consideration document in late 2017, new 2015-2016 VMS maps developed by the Northeast and Mid-Atlantic data portal teams show evidence of some fishing effort moving east in the offshore waters of New York and New Jersey. In particular, updated speed-restricted maps (indicative of active fishing) for the scallop and squid fisheries show a trend of the highest intensity of fishing effort to be in the eastern and central portions of the OSA (i.e., Fairways North, Fairways South, and Hudson North), with less effort in the west (i.e., Hudson South) (Figure 6).
- For-hire and recreational fishing stakeholders expressed less concern for offshore wind development during the stakeholder engagement process, although these stakeholders often expressed similar concerns to the commercial fishing sector regarding effects on fish and fishery

⁸⁷ NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Section 5.2.1.2, pages 94-121. November 2017.

⁸⁸ NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Section 5.2.1.2, pages 94-121. November 2017.

resources and access to important fishing grounds such as the Hudson Shelf Valley, Hudson Canyon, and others. Stakeholders reported to the State that the 102 feet (31 meters) depth in the New York Bight is very important for recreational fishing.

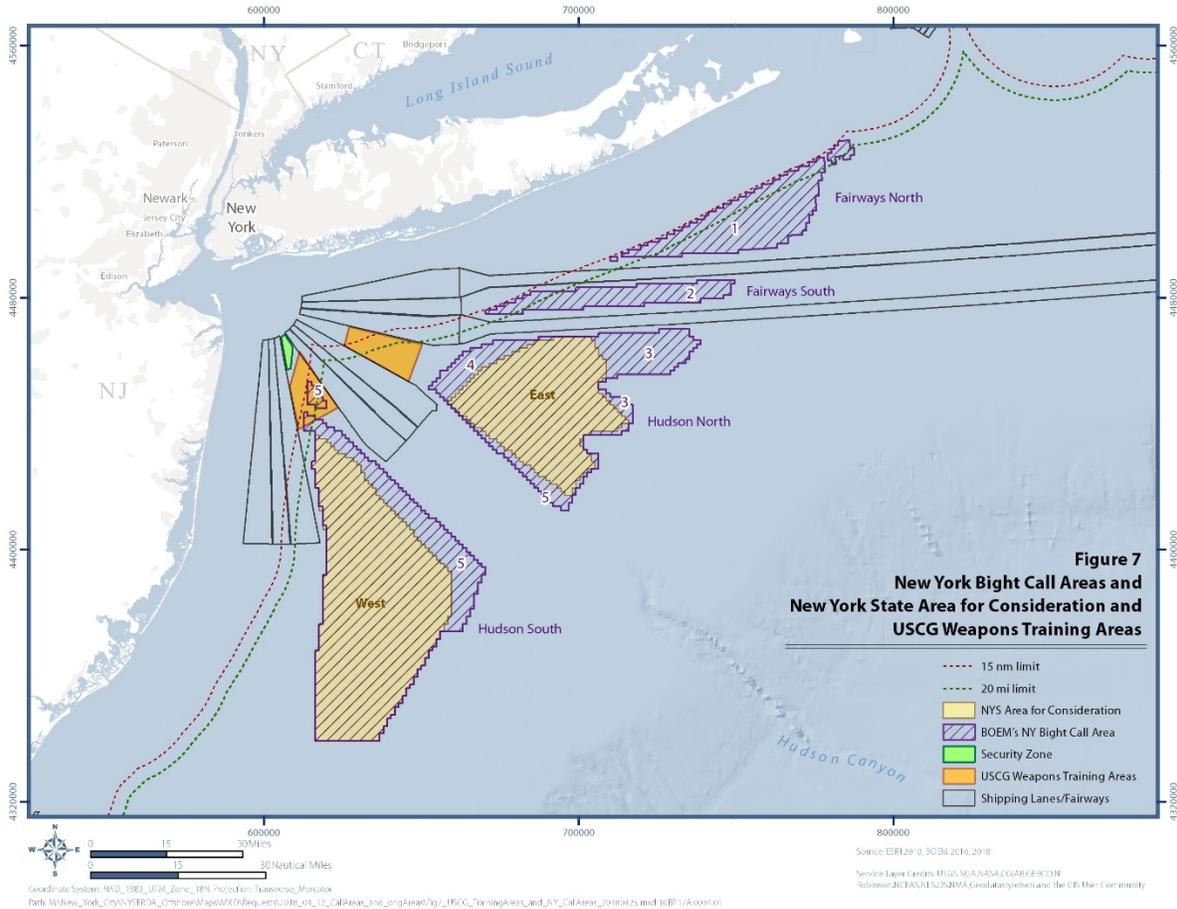


3.5 Potential for interference with radar systems covering the Call Areas (Topic #7)

The New York State Offshore Wind Master Plan Aviation and Radar Assets Study⁸⁹ identifies the uses and users of the National Airspace System that may be affected by the construction and operation of a wind farm in the OSA. The operation of wind energy systems (farms or individual turbines) has the potential to interfere with aviation systems, including airport approaches, radar systems, including the viewsheds for radar systems that monitor the skies, weather, and ocean currents, and military assets (including operational and training areas and routes). In addition, a review of potential impacts on marine radar systems is also included in this study.

⁸⁹ NYSERDA. 2017. Appendix C: *New York State Offshore Wind Master Plan Aviation and Radar Assets Study*. NYSERDA Report 17-25c. December 2017.

Site 5 shown in Figure 7 below falls within the one of the two designated USCG Weapon Training Areas, which are used by surface vessels to maintain law enforcement proficiency (Figure 7). Development in this area will likely require mitigation after detailed coordination has been conducted.



3.6 Potential buffers between WEAs within Call Areas (Topic #10), and Size and number of WEAs within the Call Areas (Topic #11)

The existing executed wind energy leases off the coast of New York and New Jersey contain approximately 423,183 combined acres, which can support at least 4,230 MW of installed offshore wind generation capacity. This assumes a power density of 0.01 MW per acre, a relatively conservative estimate based on European experience to date (which is more reflective of a power density of approximately 0.04 MW per acre). If these existing lease areas off of New York and New Jersey were fully developed, or less than fully developed but at a higher power density, at least an additional 1,670

MW of capacity⁹⁰ would need to be installed off the coasts of New York and New Jersey for the two states to reach their respective 2030 goals, which combine to equal 5,900 MW of installed capacity.⁹¹ The installation goals of New England states can be easily accommodated through existing leases off the coasts of Rhode Island and Massachusetts, which total more than 519,159 acres, thus reducing the likelihood of these states procuring from the New York Bight.

New York's Area for Consideration can accommodate more than 3,200 MW, which is nearly two times the incremental 1,670 MW need required to meet the New York and New Jersey goals. New York recognizes that leasing capacity beyond the 1,670 MW listed above, is critical for three primary reasons. First, if the existing New York and New Jersey lease areas are not fully built out, or constructed at a lower power density than the assumed 0.01 MW per acre, then there would be greater reliance on other lease areas. Second, it is vital that all procurements benefit from robust competition to ensure cost containment and ratepayer protection. Third, regional offshore wind energy goals could be adjusted upwards if initial projects are successful.

At the same time, the State believes that BOEM should focus this round of lease consideration only on the Area for Consideration, for several reasons. First, it is neither necessary nor economical to offer to lease potential areas that are suboptimal in terms of environmental sensitivity, cost, and/or other conflicts at the same time as the Area for Consideration, which for the reasons described is the relatively optimal area. Opening non-Area for Consideration lease areas is not necessary (because the Area for Consideration, incremental to existing lease areas, has capacity to meet regional installation goals, as described), and could divert leasing interest from the more cost-effective areas. That, in turn, could result in leases sold at a discount that will not result in near-term development. New York believes that supplementing the existing regional leases with 3,200 MW of additional leasing capacity found in the Area for Consideration will strike an appropriate balance, delivering both competitive leasing and procurement processes focused on the areas most likely to result in cost-effective, viable energy development.

New York also believes it is critical for BOEM to create at least four WEAs within the Area for Consideration such that multiple developers can compete in New York procurements. This would drive down ratepayer costs through competition, reduce development risk by diversifying leaseholders, and

⁹⁰ Using a power density of 0.01 MW per acre, the following capacities were calculated for the existing lease areas off of New York and New Jersey: US Wind - 1,830 MW, Ocean Wind - 1,600 MW, Empire Wind - 800 MW. This sums to 4,230 MW, which leaves 1,670 MW of additional capacity required to reach 5,900 MW.

⁹¹ New York State has a goal of 2,400 MW and New Jersey State has a goal of 3,500 MW.

would also allow BOEM to control inter-site spacing between each new WEA. Incrementally, recent market developments in neighboring states have shown that the presence of multiple leases and developers stimulates the competitive forces needed to spur a local supply chain. In turn, the industry will see significant cost reductions that will drive long-term demand for additional offshore wind installations.

Consistent with its Area for Consideration Report, New York believes that BOEM should delineate its WEAs with buffers to allow for mitigation of potential conflicts. Navigation safety principles, guidance, and European case studies should help to determine a safe minimum distance between WEAs for shipping and navigation uses. Specific navigational safety principles are noted in the following section. In the UK, the Crown Estate have typically provided for a 5-km buffer between wind farms in their lease agreements, although this can be reduced through the agreement of both wind farm tenants. While a Navigation Risk Assessment is required prior to wind farm construction, BOEM can preemptively mitigate wake effect concerns by spacing its WEAs such that these losses are minimized. New York has determined that inter-site spacing of approximately 4nm effectively mitigates most potential wake effects.

3.7 Navigational concerns (Topic #6)

The Call requests “Additional information about port-to-port or port-to-fishing location corridors [and] determination of appropriate buffers for safety based on type of vessel between these routes.” New York has analyzed relevant navigational safety guidelines in relation to the proposed Call Areas and known shipping corridors, and hereby shares the following information.

Were BOEM to lease Fairways South and North, it would allow for the siting of offshore wind farms on either side of or in close proximity to two heavily trafficked Ambrose/Nantucket traffic lanes. The Ambrose/Nantucket traffic lanes improve maritime safety by channeling vessels into streams. Currently, vessels can make unobstructed course changes by either entering or crossing at any point along these lanes provided they conduct safe passage in accordance with Rule 10 of the International Regulations for Preventing Collisions at Sea 1972 (“COLREGs”), which requires the vessel captains do so at right angles to the general direction of traffic flow.

The configuration of Fairways North and Fairways South could result in end-on or crossing encounters (both terms describe possible collision scenarios, where a vessel approaches another vessel at close range – Rule 7), or in a reduction in sea room. Insufficient sea room could limit options for any unplanned incident caused by human error, environmental conditions, or mechanical failure, including by limiting space to take evasive maneuvers when avoiding an allision with a turbine or collision with another vessel.

The ability to comply with COLREG 10 may be compromised where multiple wind farms located within the Fairways Call Areas could restrict visibility, increase ship radar interference, or limit sea room.

Vessels tend to take the most direct route possible. Large commercial vessels (those more than 70 meters in length) tend not to navigate through wind farms due to safety concerns and will opt to circumnavigate them instead. Vessels may deviate from the most direct course in order to avoid these potential safety issues, thus increasing their transit time and fuel costs.

The shape and proximity of Fairways South, in combination with the Fairways North border along the Nantucket to Ambrose traffic lane, could further restrict vessels' ability to maneuver in heavy-sea conditions. Under COLREGs, a vessel's captain is required to consider all navigation and collision risks when determining an appropriate Closest Point of Approach ("CPA") to another vessel. A CPA of 0.5nm to 1nm is considered acceptable under normal conditions, although this minimum safe distance can be increased to ensure safe passage in poor conditions. Yet the passage between wind farms, created by virtue of the proximity and location of Fairways South between these traffic lanes, could pose a safety risk for vessels attempting to maintain a course heading. According to the UK's Marine Coastguard Agency ("MCA") Guidance Note 543, a ship track could deviate as much as 20 degrees or more during transit. Thus, ships should have safe passage between obstructions which accommodates a 20-degree deviation. For a vessel transiting along a row of turbines this could influence the minimal safe distance between wind farms. For example, the current corridor width between Fairways North and South, and Fairways South and Hudson North, is 4nm. Using the MCA 20-degree guidance, it would only take 11nm before a deviation of 20 degrees will result in an encounter with a potential row of turbines (see Figure 8 below).

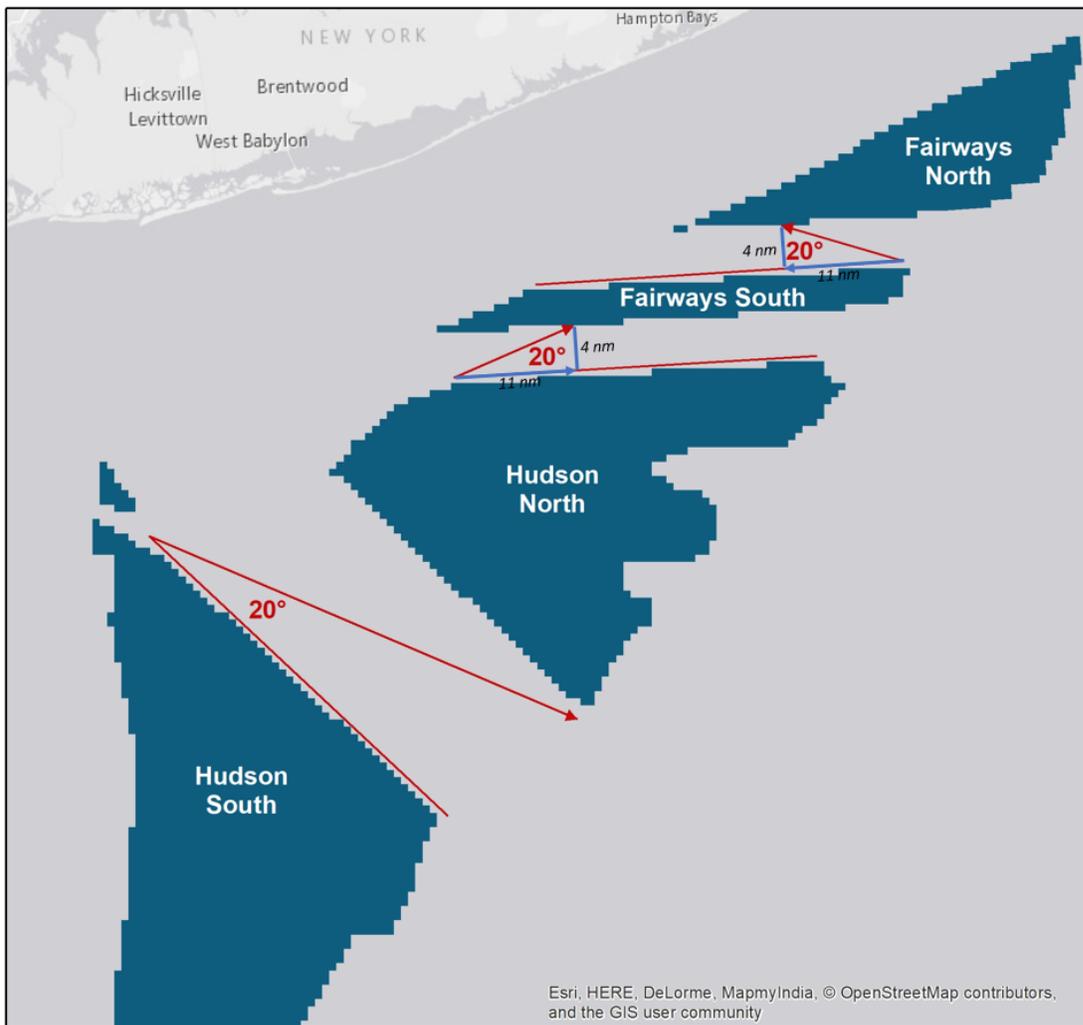
The lengths of the Fairways North and South borders with the Ambrose/Nantucket traffic lanes are significantly greater than 11nm, which could result in either non-compliance with the 20-degree guidance or avoidance of the most direct traffic lane and concomitant additional costs.

In addition, an existing transit route for tugs and towing vessels crosses from north to south and through all four Call Areas. If offshore wind energy projects are developed in each of the Call Areas, these vessels would have to deviate around multiple areas and negotiate crossing points along both inbound and outbound traffic lanes. Vessel captains would prefer to increase sea room and avoid making multiple course changes to avoid wind farms, and so may opt to take a coastal route. If wind energy development

is spread out rather than consolidated, a scattered configuration could make navigating the Bight more difficult.

For initial planning purposes and informing the preliminary identification of areas for potential locating of WEAs, and taking current best practices and spatial planning examples into account, New York recommends that the minimum distance between a Zone boundary and a traffic route, including formal routes such as TSS and fairways, should be 1nm.

Figure 8: Applying the MCA 20-degree guidance to BOEM's call areas



3.8 Other Relevant Socioeconomic, Biological, and Environmental Information (Topic #14)

Finally, the Call requests other relevant information from stakeholders. Below, New York provides information it has developed concerning the relative costs of offshore wind development in the different Call Areas, the locations of existing infrastructure that could affect placement of wind energy projects, and relative opportunities for grid connections.

Cost. The cost of offshore wind is expected to vary between offshore zones according to several key variables, including wind speed, water depth, and distance to shore, among others. Distance to shore is highly dependent on grid interconnection, which, as discussed below, is generally expected to be more technically complex, and therefore more costly, as the interconnection point is moved further east on Long Island. Considering the portions of each zone that are likely to first be developed, the relative costs between the zones are shown in Table 1 below. The Fairways North Call Area is a significant outlier due to its water depth and distance from shore.

Table 1. Relative Costs between New York Bight Call Areas⁹²

	Hudson North	Hudson South	Fairways North	Fairways South
Cost Ranking	3	1	4	2
Cost Increase vs. Low-Cost Site (%)	2%	n/a	12%	1%
Avg. Wind Speed (mph)	20.8	20.6	20.8	20.6
Avg. Water Depth (ft)	151	115	154	131

⁹² While distance was considered in developing relative cost estimates, that distance related to a hypothetical central Long Island interconnection point that represented a geographical average of potential interconnection points.

Pipelines, cables, and other third-party infrastructure. The New York State Offshore Wind Master Plan Cables, Pipelines, and Other Infrastructure Study⁹³ identified and mapped existing submarine cables, pipelines, and other infrastructure (e.g., buoys) in order to understand how they traverse the OSA and where they are concentrated. The standard construction method for crossing existing submarine cables with new offshore wind power cables is installing surface-laid concrete mattresses over the existing cables. However, each such cable crossing increases both the cost and the possibility that cable-protection devices will become potential snags for commercial fishing. Fairways South is a relatively small area with a higher density (nine cables) of cable crossings, and less space to site new wind turbines in a manner that would minimize crossings. Fairways North is farther from population centers and grid interconnection points than the Area for Consideration and would require more cable, and likely more crossings with other cables, to interconnect.

Grid Connection.

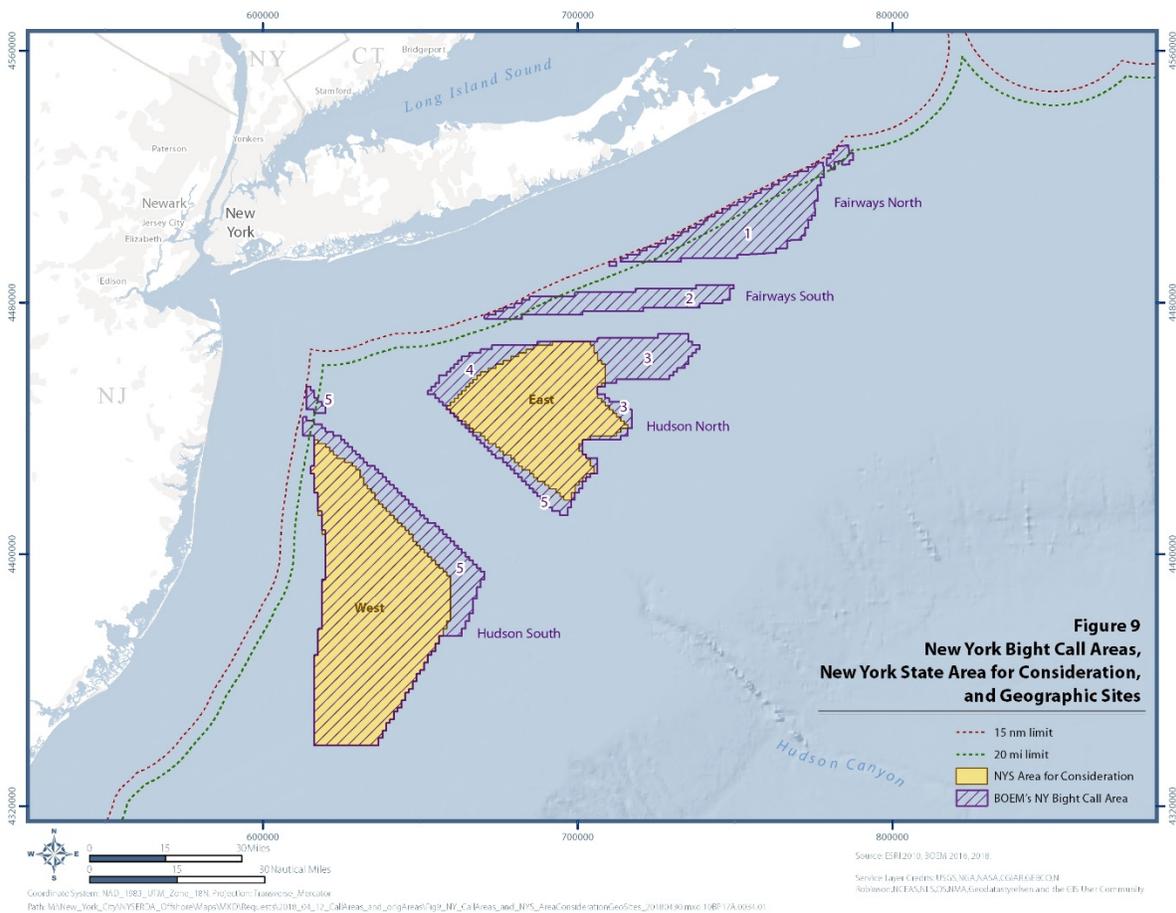
WEAs within the OSA are expected to be able to interconnect in New York to either New York City or Long Island substations. While interconnection of offshore wind is expected to be technically feasible throughout Long Island, the technical complexity and associated costs of interconnection increase as the interconnection point is moved farther east. As new WEAs are sited farther west, therefore, interconnection potential on Long Island is generally expected to become more favorable. Also, WEAs sited farther west are located closer to New York City, providing interconnection optionality for these projects.

It is likely that the most complex and expensive interconnection points would be on the eastern end of the South and North forks of Long Island, though projects of bespoke size and location, such as Deepwater Wind's South Fork project, may find optimized interconnection opportunities in this region. The technical feasibility of interconnecting offshore wind on Long Island is highly dependent on the size and location of each interconnecting point and cannot be determined until the specifics of these factors are determined and the appropriate analyses are conducted. Larger amounts of injection are likely to require multiple injection points. The analysis of specific interconnection proposals and market conditions will determine which plant size and interconnection points are economically feasible.

⁹³ NYSERDA. 2017. Appendix F: *New York State Offshore Wind Master Plan Cables, Pipelines, and Other Infrastructure Study*. NYSERDA Report 17-25f. December 2017.

4 Analysis of Geographic Sites

New York's extensive data gathering, stakeholder outreach, and analyses described throughout this Comment letter reinforce the conclusion that the Area for Consideration as originally delineated by New York would allow for sufficient wind energy development to meet present regional goals with the least potential for conflicts and the best opportunity for the cost-effective development of new wind energy areas. The Area for Consideration was identified following examination of the larger OSA that included the entirety of the Call Areas, but which reached a conclusion that the Area for Consideration presents the most optimal locations for near-term development. This section provides a summary of key reasons, along with references to the underlying data, why New York removed Sites 1, 2, 3, 4 and 5 from the Area for Consideration. The locations of the Sites are illustrated in Figure 1 under Section 1 above and in Figure 9 below.



4.1 Site 1 - Fairways North

New York removed Site 1 from the Area for Consideration because offshore wind energy development within Fairways North could have greater visibility due to its distance from shore, greater cost, and a greater potential to disrupt diverse commercial fishing techniques and fish species. These reasons are further described below.

- **Visibility.** A large portion of Fairways North is closer to shore, meaning that any wind energy projects sited within it would be more likely to be closer and more visible than in the Area for Consideration. Based on the New York State Offshore Wind Master Plan Visual Threshold Study, the State determined that development of wind energy projects at a distance greater than 20 miles (17.4nm) from shore would be most prudent, as that minimum distance would ensure no readily-discernable impacts on the casual viewer a vast majority of the time; closer projects would appear larger on the horizon and therefore more readily discernable. As a result, the Area for Consideration was constrained to areas more than 20 statute miles from shore. If this restriction were adopted by BOEM, Fairways North would be reduced from 250 square nautical miles to 90 square nautical miles, a more than 60% reduction in available development space.^{94,95}
- **Historic Properties.** Potential visual effects on specific onshore historic properties were not considered in New York's Area for Consideration process. A preliminary analysis, summarized in Section 3.3, shows that offshore wind development that occurs within 20 statute miles of the shoreline from Fairways North has the potential to visually affect 16 NRHP-listed historic properties in New York and Rhode Island.⁹⁶ These visual effects may be considered significant if it is determined that the setting, views and/or viewshed of these historic properties are character-defining features that contribute to their historic significance.
- **Higher Construction Costs.** While the average wind speeds are higher in Fairways North (20.8 mph) than the other Call Areas and would likely lead to somewhat greater energy output, Fairways North also has the highest average water depth (~53m overall and ~56m, more than 20 statute miles from shore), nearing technical development limits, and the greatest distance to onshore interconnection opportunities. Fairways North also is farther from population centers and

⁹⁴ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. December 2017.

⁹⁵ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Page 18. September 2017. Revised December 2017.

⁹⁶ One of these 16 NRHP-listed historic properties is located in an area along the shoreline of Long Island, New York where it could potentially be visually affected by offshore wind projects developed within 20 statute miles of the shoreline in both Site 1 – Fairways North and Site 2 – Fairways South.

grid interconnection points than the Area for Consideration and would require longer transmission lines for grid connection, and likely more crossings with other cables, to interconnect. Longer transmission lines increase the project development cost and increase the project's physical and environmental footprint. As a result, the cost to construct a project in Fairways North is the highest of those studied, representing a 12% to 18% premium relative to other areas.⁹⁷

- **Fishing Industry Concerns.** Fishing industry stakeholders reported that Fairways North (along with Fairways South) poses the greatest concern to the highest number of individual fishers, and supports the greatest diversity of fishery resources for regional fishers. Numerous fishers stated that Fairways North is heavily used and transited by vessels from ports in New York, Rhode Island, Massachusetts, Connecticut, New Jersey, and other states representing diverse fisheries. Many fishers identified Fairways North as important to their operations, including numerous day boats operating out of New York, Massachusetts and Rhode Island ports. The fishers use both fixed and mobile gear to catch, for example, scallops, monkfish, squid, quahog and lobster.
- **Higher Essential Fish Habitat and Fish Core Biomass than Hudson North and South.** The fishing feedback is supported by data on Essential Fish Habitat and Fish Core Biomass. In comparison to more south-westerly areas, Fairways North has higher Fish Core Biomass and supports a greater number of species-specific Essential Fish Habitat designations.⁹⁸
- **Navigational concerns.** Fairways North is tightly confined by the inbound Ambrose to Nantucket safety fairway to the south. Development of Fairways North could pose a risk to navigation, or result in ships taking longer, less direct and less economical routes, by virtue of its location and proximity to two heavily trafficked Ambrose to Nantucket traffic lanes and outbound safety fairways. An existing transit route for tugs and towing vessels crosses from north to south and through all four Call Areas. If offshore wind is developed in this Call Area, these vessels would have to deviate around multiple areas and negotiate crossing points along both inbound and outbound traffic lanes. Vessel captains would prefer to increase sea room and avoid making multiple course changes to avoid wind farms, and so may opt to take a coastal route. The present location of Call Area Fairways North in combination with Fairways South, could not only compromise navigational safety to these stakeholders, but increase their costs.

⁹⁷ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Pages 52-53. September 2017. Revised December 2017.

⁹⁸ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Page 40. September 2017. Revised December 2017.

4.2 Site 2 - Fairways South

Similar to Fairways North, New York deemed Fairways South to have a lower development favorability rating than other areas. As described more fully below, this determination was made based on the distance from shore, potential for disruption of fisheries, navigation concerns, cost implications and issues relating to submerged cables, and the potential for marine mammal risk.

- **Visibility.** Based on the New York State Offshore Wind Master Plan Visual Threshold, the State determined that development of wind energy projects at a distance greater than 20 miles (17.4nm) from shore would be most prudent, as it would ensure no readily-discernable impacts on the casual viewer a vast majority of the time; closer projects would appear larger on the horizon and therefore more readily discernable. As a result, the Area for Consideration was constrained to areas more than 20 miles from shore. If this restriction were adopted by BOEM, Fairways South would be reduced from 162 square nautical miles to 83 square nautical miles, a 50% reduction in available development space.⁹⁹ In other words, a large portion of Fairways South is closer to shore, meaning that any wind energy projects sited within it would be more likely to be closer and more visible than in the Area for Consideration.
- **Historic Properties.** Potential visual effects on specific onshore historic properties were not considered in New York's Area for Consideration process. A preliminary analysis, summarized in Section 3.3, shows that offshore wind development that occurs within 20 miles of the shoreline from Fairways South has the potential to visually affect five NRHP-listed historic properties in New York.¹⁰⁰ These visual effects may be considered significant if it is determined that the setting, views and/or viewshed of these historic properties are character-defining features that contribute to their historic significance.
- **Navigational Concerns.** Fairways South is tightly confined by the Ambrose to Nantucket fairways to the north and south, resulting in an area only 4nm wide. From a safety perspective, development of Fairways South could pose a risk to navigation, or result in ships taking longer, less direct and less economical routes, by virtue of its location and proximity to two heavily trafficked Ambrose to Nantucket traffic lanes.

⁹⁹ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Page 18. September 2017. Revised December 2017.

¹⁰⁰ One of these 16 NRHP-listed historic properties is located in an area along the shoreline of Long Island, New York where it could potentially be visually affected by offshore wind projects developed within 20 statute miles of the shoreline in both Site 1 – Fairways North and Site 2 – Fairways South.

Additionally, an existing transit route for tugs and towing vessels crosses from north to south and through all four Call Areas. If offshore wind is developed in each of the Call Areas, these vessels would have to deviate around multiple areas and negotiate crossing points along both inbound and outbound traffic lanes. Vessel captains would prefer to increase sea room and avoid making multiple course changes to avoid wind farms, and so may opt to take a coastal route. The present location of Call Areas Fairways South and North, in combination with the proximity and orientation of the Ambrose/Nantucket traffic lanes, could not only compromise navigational safety to these stakeholders, but increase their costs. The USCG has stated that they will consider setbacks from shipping lanes and traffic separation schemes on a case-by-case basis. If the USCG were to recommend a 2-nm setback from the traffic separation scheme, then Fairways South would be virtually undevelopable due to its small size.

- **Fishing Industry Concerns.** Many fishers identified Fairways South, in conjunction with Fairways North, as important to their operations, including numerous day boats operating out of New York, Massachusetts and Rhode Island ports. The fishers use both fixed and mobile gear to catch, for example, scallops, monkfish, squid, quahog and lobster. This area, second only to Fairways North, seems to pose the greatest concern to the highest number of individual fishermen compared to the Hudson North and South Call Areas.¹⁰¹
- **Cost Implications and Fishery Concerns Associated with Submarine Cables.** A high density of NASCA Member Cables currently in service cross Fairways South. Fairways South supports perhaps the greatest density of cables per unit area, particularly on the eastern end of the Call area, beyond 20nm from shore. While processes and methods are available to cross existing cables or pipelines with new offshore wind power cables, each crossing increases costs and the possibility of cable protection devices becoming snags for commercial fishing, since the standard method of cable protection at cable crossing locations is surface-laid concrete mattresses. As a result, avoidance of areas with a higher relative density of existing submarine cables makes both economic and practical sense. Fairway South is a relatively small area with a higher density of cable crossings, and less space to site new wind turbines in a manner that would minimize crossings.
- **Impacts to Marine Mammals.** NYSDEC expressed concerns about potential impacts to marine mammals that could be caused by WEA development in Fairways South. While the data do not show an increased number of marine mammals in Fairways South, if it were fully developed for

¹⁰¹ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Pages 41-45. September 2017. Revised December 2017.

offshore wind, it would remove neutral space between the fairways. Migrating marine mammals would have to cross a shipping fairway, followed by a wind farm, followed by another shipping fairway, potentially putting these organisms at increased risk from ship strike.

4.3 Site 3 - Two eastern portions of Hudson North outside of the State's Area for Consideration

Site 3 was removed from the Area for Consideration for the following reasons:

Cost Implications and Fishery Concerns Associated with Submarine Cables. A high density of NASCA Member Cables currently in service cross Area 3 within the Hudson North call area. While processes and methods are available to cross new offshore wind power cables with existing cables, each crossing increases costs and the possibility of cable protection devices becoming snags for commercial fishing since the standard method of cable protection at cable crossing locations is surface-laid concrete mattresses. As a result, avoidance of Area 3, which has a higher relative density of existing submarine cables, makes both economic and practical sense.¹⁰²

4.4 Site 4 - Northern area of Hudson North that borders the Empire Wind site

Site 4 was removed from the Area for Consideration for the following reasons:

Wake Effects and Navigational Concerns. Some lease areas previously identified by BOEM are directly adjoined, requiring developers to coordinate between one another to minimize wake effects potentially resulting in less than optimal energy output. Assuming a capacity of 800 MW is installed at the Empire Wind site up to and including the border with Site 4, wake effects from Empire Wind could result in Site 4 losing more than 2% of its energy on an annual basis. This is excessive and would be without precedent in Europe for sites of this size. By removing Site 4 from the Area of Consideration, sufficient space has been allowed to ensure that wakes from the Empire Wind site have dissipated before impacting on New York State's Area for Consideration East. Additionally, defined and appropriately located spaces between lease areas can help support safe navigation between and transit through multiple wind energy areas.

¹⁰² NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Pages 14-55. September 2017. Revised December 2017.

New York State therefore removed Site 4 from the Area for Consideration in order to improve transit and minimize potential wake effects associated with the Equinor (formerly Statoil) Empire Wind project. Although the wind blows predominantly from the south west in the New York / New Jersey Bight, north westerly winds are also common during winter months. It is therefore important to allow adequate space southeast of the Empire Wind Project to ensure wake effects from it have reduced before impacting upon turbines in the Area for Consideration East Zone.

BOEM has already set a precedent for a 1-nm buffer zone around the Empire Wind lease area, but internationally-recognized guidance has adopted a 2-nm buffer for navigational safety¹⁰³ and the USCG recommends a 5-nm buffer at the entrance to shipping lanes. New York State removed Site 4 in order to further enhance the separation distance between potential rows of wind turbine located on the borders of the Empire Wind area and Area for Consideration East. The distance was considered sufficient to increase navigational safety for vessels opting to transit between the two sites.

4.5 Site 5 - Western edge of Hudson North and eastern Edge of Hudson South

Site 5 was removed from the Area for Consideration for the following reasons:

- **Navigational Concerns.** New York State excluded logical extensions of shipping lanes between Hudson North and Hudson South and the shipping lanes west of Hudson South to reduce the potential for conflicts with commercial shipping and navigation. Extensions accommodated high concentrations of commercial shipping traffic (i.e., cargo, tankers and passenger vessels) and were characterized by the State's shipping and navigation study as main traffic routes.¹⁰⁴ For Hudson North and Hudson South, these logical exclusions were sufficiently wide to accommodate the 20-degree deviation guidance for safe passage between obstructions (see Figure 7). Additionally, a 1-nm navigation setback from the outer edges of all of the shipping lanes was excluded from consideration for additional maritime safety.¹⁰⁵ This minimum distance from a WEA is in line with the precedent set by BOEM.

¹⁰³ Nautical Institute. 2013. *The Shipping Industry and Marine Spatial Planning - A professional approach*. Page 6. November 2013. Accessed July 11, 2018. <https://www.nautinst.org/download.cfm?docid=9423102B-A083-4C8D-94B6BB215544BB42>.

¹⁰⁴ Main vessel traffic routes, which were considered to represent frequent on-going or regular runner/operator routes.

¹⁰⁵ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Page 14. September 2017. Revised December 2017.

- **Visibility.** The State removed a small portion of Site 5 that is within 20 miles from the coast of New Jersey based on the New York State Offshore Wind Master Plan Visual Threshold Study. That information indicated to the State that development of wind energy projects at a distance greater than 20 miles (17.4nm) from shore would be most prudent, as it would ensure no readily-discernable impacts on the casual viewer a vast majority of the time; closer projects would appear larger on the horizon and therefore more readily discernable.¹⁰⁶
- **Historic Properties.** Potential visual effects on historic properties were not considered in New York State’s initial site selection process. This preliminary analysis, summarized in Section 3.3, shows that offshore wind development that occurs within 20 statute miles of the shoreline from the northern portion of Site 5 has the potential to visually affect 10 NRHP-listed historic properties in New Jersey. These visual effects may be considered significant if it is determined that the setting, views and/or viewshed of these historic properties are character-defining features that contribute to their historic significance.
- **Hudson Shelf Valley Setback.** The Site 5 along the boundary of Hudson South borders the Hudson Shelf Valley as depicted in Figure 5. While marine mammals and other wildlife may occur throughout the OSA, the best available data indicate that of the areas considered, the Hudson Shelf Valley, its slopes and adjacent areas host potentially the greatest diversity of marine species. The biodiversity of the Hudson Shelf Valley is illustrated in the output maps of the State’s environmental sensitivity model, and the marine mammals and bird maps.^{107,108,109} Additionally, the Hudson Shelf Valley and adjacent areas were identified by fishers as a nutrient rich area that boasts both a diversity of marine species and an area where fish that are typically found farther offshore (e.g. Tuna) often occur during the summer months due to the deeper cooler waters. Observer Data show this area to be heavily utilized by mobile gear types.¹¹⁰ Based on these factors, New York State issued a 2.3-mile (2-nm) setback from the Hudson Shelf Valley to avoid a majority of the above risks.

¹⁰⁶ NYSERDA. 2017. Appendix S: *New York State Offshore Wind Master Plan Visibility Threshold Study*. NYSERDA Report 17-25s. December 2017.

¹⁰⁷ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Page 37. September 2017. Revised December 2017.

¹⁰⁸ NYSERDA. 2017. Appendix I: *New York State Offshore Wind Master Plan Environmental Sensitivity Analysis*. NYSERDA Report 17-25I. November 2017.

¹⁰⁹ NYSERDA. 2017. Appendix D: *New York State Offshore Wind Master Plan Birds and Bats Study*. NYSERDA Report 17-25D. Pages 13-14. November 2017.

¹¹⁰ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Page 45. September 2017. Revised December 2017.

- **Aviation and Radar Impacts.** There are 26 civilian airports within 50 miles of the OSA, including a mix of commercial, reliever, and general aviation airports. Additionally, Terminal Doppler Weather Radar Systems are located at JFK Newark Airports. The 37-mile impact zone of the Terminal Doppler Weather Radar located at JFK Airport overlaps the northwest corner of Hudson South area. In this area, it is anticipated that coordination and mitigation will be needed to ensure project compatibility with existing systems.¹¹¹ In addition, there is a USCG Weapons Training Area in Site 5. While these circumstances do not necessarily preclude development of offshore wind energy in Site 5, they do provide rational support for removing Site 5 from the Area for Consideration.

4.6 Area for Consideration

New York State’s Area for Consideration is comprised of two areas, labelled Area for Consideration East and Area for Consideration West.¹¹² AfC East is located between the Ambrose-to-Nantucket Safety Fairway to the north and Hudson Shelf Valley to the south, measures 389,280 acres, and is 26.5 miles from land at its closest point. AfC West is located between the Hudson Shelf Valley to the northeast and the Barnegat-to-Ambrose Traffic Lane to the west, measures 672,522 acres, and is 21.1 miles from land its closest point.¹¹³ In this section, the State describes for BOEM the several reasons and the underlying data that, on balance, led the State to so delineate these areas as optimal for the development of WEAs in the New York Bight.

4.6.1 Area for Consideration East

Area for Consideration East is of sufficient distance from shore, has minimal cable crossings and is in a broad area between shipping fairways, making its risk to navigation minimal. It appears to present no greater risk to wildlife or habitats than any of the other areas within the BOEM Call. Because of its distance from shore, it avoids or minimizes the potential for visually affecting onshore historic, cultural and recreational properties, particularly those historic properties for which setting, views, or viewsheds are character-defining features that contribute to their significance. Additionally, the development costs

¹¹¹ NYSERDA. 2017. Appendix C: *New York State Offshore Wind Master Plan Aviation and Radar Assets Study*. NYSERDA Report 17-25C. November 2017.

¹¹² NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Pages 6, 11. September 2017. Revised December 2017.

¹¹³ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Page 11. September 2017. Revised December 2017.

and interconnection opportunities for wind facilities in Area for Consideration East are among the lowest of the sites, partly because of a substantial portion of area being located on the nearshore side of the polygon, further reducing transmission line length and associated costs.

The greatest conflict with New York State's Area for Consideration East is with commercial fishing, particularly mobile gear¹¹⁴ used by the Scallop and Ocean Quahog fisheries.¹¹⁵ Scallop fishers have noted that the scallop fishery peaks in this area and declines slowly toward the north-east and south-west.¹¹⁶ The State encourages BOEM to consider the gradations of the scallop fishery, and other fisheries in the OSA, with the ultimate goal of minimizing impacts to those fisheries to the extent practicable.

4.6.2 Area for Consideration West

New York State's Area for Consideration West is of sufficient distance from shore (at least 20 miles) and could readily be developed to provide power to either New York or New Jersey transmission systems. While this Area does include some cables, these are of minimal concern for potential OSW development given the size of the Area. The Area for Consideration West is in a broad area between shipping fairways, making its risk to navigation minimal. This is further supported by the extra space provided by the setback from the Hudson Shelf Valley. It appears overall to present no greater risk to wildlife or habitats than any of the other areas within the BOEM Call. Because of its distance from shore, it avoids or minimizes the potential for visually affecting terrestrial historic properties, particularly those historic properties for which setting, views, or viewsheds are character-defining features that contribute to their significance. Additionally, the development costs and interconnection opportunities are among the lowest of the areas in the Call, particularly the northern portion.

¹¹⁴ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 17, page 42. September 2017. Revised December 2017; and NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Figure 6, page 50. November 2017.

¹¹⁵ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 16, page 41. September 2017. Revised December 2017; and NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Figure 3, page 43. November 2017.

¹¹⁶ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 18, page 43. September 2017. Revised December 2017; and NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Figure 8, page 107. November 2017; and NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Section 5.2.1.2, pages 94-121. November 2017.

The greatest conflict with this Area is with commercial fishing, particularly mobile gear¹¹⁷ along the north-eastern portion, used by the scallop and surfclam fisheries.¹¹⁸ Some stationary gear is also used, but this tends to be along the Hudson Shelf Valley areas that have been excluded. The western side of this area was one of the only areas that fishers say is less heavily used by the industry.¹¹⁹ Additionally, NYSDEC suggests that the surfclam industry in this region is in decline. Newly developed maps of speed restricted VMS data (indicative of active fishing) for 2015-2016 also show evidence of reduced effort in the west for the scallop and squid fisheries (Figure 6).

¹¹⁷ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 17, page 42. September 2017. Revised December 2017; and NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Figure 6, page 50. November 2017.

¹¹⁸ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 16, page 41. September 2017. Revised December 2017; and NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Figure 3, page 43. November 2017.

¹¹⁹ NYSERDA. 2017. *New York State Area for Consideration for the Potential Locating of Offshore Wind Energy Areas*. NYSERDA Report 17-25u. Figure 18, page 43. September 2017. Revised December 2017; and NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Figure 8, page 107. November 2017; and NYSERDA. 2017. Appendix J: *New York State Offshore Wind Master Plan Fish and Fisheries Study*. NYSERDA Report 17-25j. Section 5.2.1.2, pages 94-121. November 2017.

5 Conclusion

By this Call response, the State of New York supports its recommendation that BOEM delineate and lease new WEAs within the Area for Consideration. That recommendation is based upon New York's Offshore Wind Master Plan, the Master Plan's 20 associated studies, and extensive stakeholder data gathered by the State, and is further affirmed by additional information developed after the State defined its Area for Consideration. New York also has identified the data and reasoning that caused the State specifically to exclude, for present purposes, each geographic area included in BOEM's Call that falls outside of the Area for Consideration. By leasing at least four new WEAs within the Area for Consideration, BOEM will be phasing its New York Bight leasing in a manner designed to allow for the cost-effective development of WEAs, the meeting of regional offshore wind energy goals, and the creation of economic conditions that will encourage the growth of this nascent American industry.

Based upon the above, the State of New York respectfully requests that BOEM expedite the leasing of at least four WEAs within the Area for Consideration, with a total generating capacity of 3,200 MW.

* * *

Appendix A. Area for Consideration for the Potential Locating of Offshore Wind Energy Areas

New York State's *Area for Consideration for the Potential Locating of Offshore Wind Energy Areas* is located at the following website:

<https://www.nyseda.ny.gov/All-Programs/Programs/Offshore-Wind/New-York-Offshore-Wind-Master-Plan/Area-for-Consideration>

It is also being provided to BOEM with a hard copy version of this comment letter.

Appendix B. New York State Offshore Wind Master Plan: Charting a Course to 2,400MW of Offshore Wind Energy

New York State's *Offshore Wind Master Plan: Charting a Course to 2,400MW of Offshore Wind Energy* is located at the following website:

<https://www.nyseda.ny.gov/All-Programs/Programs/Offshore-Wind/New-York-Offshore-Wind-Master-Plan>

It is also being provided to BOEM with a hard copy version of this comment letter.

Appendix C. New York State Offshore Wind Master Plan Studies

New York State's *Offshore Wind Master Plan* Studies are located at the following website:

<https://www.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind/New-York-Offshore-Wind-Master-Plan/Studies-and-Surveys>

They are also being provided to BOEM with a hard copy version of this comment letter.