DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
Letter of Authorization

Ocean Wind, LLC (Ocean Wind), a wholly owned subsidiary of Orsted Wind Power North America, LLC (Orsted), and those persons it authorizes or funds to conduct activities on its behalf in the specified geographical region (see **Specified Geographical Region** section and Figure 1 below), are authorized to take marine mammals incidental to construction of the Ocean Wind 1 Offshore Wind Energy Project (Project), located in state and Federal waters offshore New Jersey, subject to the provisions of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq*.; MMPA) of 1972, as amended, and the applicable regulations (see 50 CFR §§ 217.260 - 217.269; hereinafter, "the regulations"), provided they are in compliance with all terms, conditions, and requirements described herein.

Effective Dates

This Letter of Authorization (LOA) is effective for a period of five years, beginning on October 13, 2023 and expiring after October 12, 2028 (see also 50 CFR § 217.261).

Specified Geographical Region

The specified geographical region is the Mid-Atlantic Bight, which includes, but is not limited to, the Bureau of Ocean Energy Management (BOEM) Lease Area Outer Continental Shelf (OCS)-A 0498 Commercial Lease of Submerged Lands for Renewable Energy Development, two export cable routes, and two sea-to-shore transition points located in New Jersey at Oyster Creek, Island Beach State Park in Barnegat Bay, Farm Property, and BL England (see Figure 1) (see also 50 CFR § 217.260(b)).

Specified Activities

The specified activities are impact pile driving of wind turbine generator (WTG) and offshore substation (OSS) foundations (*i.e.*, monopiles and pin piles for jacket foundations); vibratory pile driving (installation and subsequently removal) of cofferdams and goal posts; site characterization surveys using high-resolution geophysical (HRG) acoustic sources; detonation of unexploded ordnances or munitions and explosives of concern (UXOs/MECs); vessel transit within the specified geographical region to transport crew, supplies, and materials; operation of WTGs; fishery and ecological monitoring surveys; placement of scour protection; and trenching, laying, and burial activities associated with the installation of the export cable route from OSSs

to shore-based converter stations and inter-array cables between turbines (see also 50 CFR § 217.260(c)).

1. **Permissible Methods of Taking:**

Ocean Wind may incidentally, but not intentionally, take marine mammals within the specified geographical region in the course of conducting the specified activities, provided Ocean Wind is in complete compliance with all terms, conditions, and requirements described herein (see also 50 CFR § 217.262).

(a) Permissible methods of taking consist of:

(1) Level B harassment associated with the acoustic disturbance of marine mammals by impact pile driving (WTG and OSS foundation installation), vibratory pile driving (cofferdam and goal post installation and removal), UXO/MEC detonations, and HRG site characterization surveys; and

(2) Level A harassment associated with impact pile driving of WTG and OSS foundations and UXO/MEC detonations.

(b) Take by mortality or serious injury of any marine mammal species is not authorized.

(c) The incidental taking of marine mammals by the specified activities described above is limited to only the species and stocks found in Table 1 below.

2. **Prohibitions:**

Except for the takings described under **Permissible Methods of Taking**, it is unlawful for any person to do any of the following in connection with the specified activities described herein:

(a) Violate or fail to comply with the terms, conditions, and requirements of this LOA or the regulations;

(b) Take any marine mammal not specified in Table 1 below;

(c) Take any marine mammal (as specified in Table 1 below) in any manner other than those specified in **Permissible Methods of Taking** above or number greater than those specified in Table 1; and

(d) Take any marine mammal (as specified in Table 1 below) after NOAA Fisheries' Office of Protected Resources determines such takings results in more than a negligible impact on the species or stocks of the specified marine mammals (*see also* 50 CFR § 217.263).

Pursuant to 16 U.S.C. 1371(a)(5)(B), NOAA Fisheries shall withdraw or suspend this authorization to take marine mammals, if, after notice and opportunity for public comment[1], it finds that:

(1) The methods of taking or the mitigation, monitoring, or reporting measures are not being substantially complied with, or

(2) The taking authorized in the regulations and this LOA is having, or may have, more than a negligible impact on an affected species or stock.

3. Mitigation Requirements:

When conducting the specified activities in the specified geographic region, Ocean Wind must implement the following mitigation measures (*see also* 50 CFR § 217.264):

(a) *General conditions.* Ocean Wind must comply with the following general measures:

(1) A copy of any issued LOA must be in the possession of Ocean Wind and its designees, all vessel operators, visual protected species observers (PSOs), passive acoustic monitoring (PAM) operators, pile driver operators, and any other relevant designees operating under the authority of the issued LOA;

(2) Ocean Wind must conduct training for construction, survey, and vessel personnel and the marine mammal monitoring team (PSO and PAM operators) prior to the start of all in-water construction activities in order to explain responsibilities, communication procedures, marine mammal detection and identification, mitigation, monitoring, and reporting requirements, safety and operational procedures, and authorities of the marine mammal monitoring team(s). This training must be repeated for new personnel who join the work during the project. A description of the training program must be provided to NMFS at least 60 days prior to the initial training before in-water activities begin. Confirmation of all required training for all indicated personnel (*i.e.*, construction, survey, vessel, visual PSOs, PAM operators) must be documented on a training course log sheet and reported to NMFS Office of Protected Resources prior to initiating project activities;

(3) Prior to and when conducting any in-water activities and vessel operations, Ocean Wind personnel and contractors (*e.g.*, vessel operators, PSOs) must use available sources of information on North Atlantic right whale presence in or near the Project Area including daily monitoring of the Right Whale Sightings Advisory System, and monitoring of U.S. Coast Guard VHF Channel 16 throughout the day to receive notification of any sightings and/or information associated with any Slow Zones (*i.e.*, Dynamic Management Areas (DMAs) and/or acoustically-triggered slow zones) to provide situational awareness for both vessel operators, PSO(s), and PAM operator(s). The marine mammal monitoring team must

[1] If NMFS determines an emergency exists that poses a significant risk to the well-being of a species or stock, the notice and comment requirement is waived (see 16 U.S.C. 1371(a)(5)(C)(i)).

monitor these systems no less than every 4 hours. For any UXO/MEC detonation, these systems must be monitored for 24 hours and immediately prior to blasting;

(4) Any marine mammal observed by project personnel must be immediately communicated to any on-duty PSOs, PAM operator(s), and all vessel captains. Any large whale observation or acoustic detection by PSOs or PAM operators must be conveyed to all vessel captains;

(5) For North Atlantic right whales, any visual or acoustic detection must trigger a delay to the commencement of pile driving, UXO/MEC detonation, and HRG surveys.

(6) In the event that a large whale is sighted or acoustically detected that cannot be confirmed as a non-North Atlantic right whale, it must be treated as if it were a North Atlantic right whale for purposes of mitigation;

(7) If a delay to commencing an activity is called for by the Lead PSO or PAM operator, Ocean Wind must take the required mitigative action. If a shutdown of an activity is called for by the Lead PSO or PAM operator, Ocean Wind must take the required mitigative action unless shutdown would result in imminent risk of injury or loss of life to an individual, pile refusal, or pile instability. Any disagreements between the Lead PSO, PAM operator, and the activity operator regarding delays or shutdowns would only be discussed after the mitigative action has occurred;

(8) If an individual from a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized take number has been met, is observed entering or within the relevant Level B harassment zone prior to beginning a specified activity, the activity must be delayed. If the activity is ongoing, it must be shut down immediately, unless shutdown would result in imminent risk of injury or loss of life to an individual, pile refusal, or pile instability. The activity must not commence or resume until the animal(s) has been confirmed to have left and is on a path away from the Level B harassment zone or after 15 minutes for small odontocetes and pinnipeds, and 30 minutes for all other species with no further sightings;

(9) For in-water construction heavy machinery activities, if a marine mammal is on a path towards or comes within 10 meters (m) (32.8 feet) of equipment, Ocean Wind must cease operations until the marine mammal has moved more than 10 m on a path away from the activity to avoid direct interaction with equipment;

(10) All vessels must be equipped with a properly installed, operational Automatic Identification System (AIS) device and Ocean Wind must report all Maritime Mobile Service Identify (MMSI) numbers to NMFS Office of Protected Resources;

(11) Ocean Wind consents to on-site observation and inspections by Federal agency personnel (including NOAA personnel) during activities described in this subpart,

for the purposes of evaluating the implementation and effectiveness of measures contained within the LOA and this subpart; and

(12) It is prohibited to assault, harm, harass (including sexually harass), oppose, impede, intimidate, impair, or in any way influence or interfere with a PSO, PAM Operator, or vessel crew member acting as an observer, or attempt the same. This prohibition includes, but is not limited to, any action that interferes with an observer's responsibilities, or that creates an intimidating, hostile, or offensive environment. Personnel may report any violations to the NMFS Office of Law Enforcement.

(b) *Vessel strike avoidance measures.* Ocean Wind must comply with the following vessel strike avoidance measures, unless an emergency situation presents a threat to the health, safety, or life of a person or when a vessel, actively engaged in emergency rescue or response duties, including vessel-in-distress or environmental crisis response, requires speeds in excess of 10 knots (kn) (11.5 miles per hour (mph)) to fulfill those responsibilities, while in the specified geographical region:

(1) Prior to the start of the Project's activities involving vessels, Ocean Wind must receive a protected species training that covers, at a minimum, identification of marine mammals that have the potential to occur where vessels would be operating; detection observation methods in both good weather conditions (*i.e.*, clear visibility, low winds, low sea states) and bad weather conditions (*i.e.*, fog, high winds, high sea states, with glare); sighting communication protocols; all vessel speed and approach limit mitigation requirements (*e.g.*, vessel strike avoidance measures); and information and resources available to the project personnel regarding the applicability of Federal laws and regulations for protected species. This training must be repeated for any new vessel personnel who join the Project. Confirmation of the observers' training and understanding of the Incidental Take Authorization (ITA) requirements must be documented on a training course log sheet and reported to NMFS;

(2) Ocean Wind's vessels, regardless of their vessel's size, must maintain a vigilant watch for all marine mammals and slow down, stop their vessel, or alter course to avoid striking any marine mammal;

(3) Ocean Wind's underway vessels (*e.g.,* transiting, surveying) operating at any speed must have a dedicated visual observer on duty at all times to monitor for marine mammals within a 180° direction of the forward path of the vessel (90° port to 90° starboard) located at an appropriate vantage point for ensuring vessels are maintaining appropriate separation distances (see Table 6 below). Visual observers must be equipped with alternative monitoring technology (*e.g.,* night vision devices, infrared cameras) for periods of low visibility (*e.g.,* darkness, rain, fog, *etc.*). The dedicated visual observer must receive prior training on protected species detection and identification, vessel strike minimization procedures, how and when to communicate with the vessel captain, and reporting requirements in this subpart. Visual observers may be third-party observers (*i.e.,* NMFS-approved PSOs) or trained crew members, as defined in (b)(1) of this subsection.

(4) Ocean Wind must continuously monitor the U.S. Coast Guard VHF Channel 16 at the onset of transiting through the duration of transiting, over which North Atlantic right whale sightings are broadcasted. At the onset of transiting and at least once every 4 hours, vessel operators and/or trained crew member(s) must also monitor the project's Situational Awareness System, WhaleAlert, and relevant NOAA information systems such as the Right Whale Sighting Advisory System (RWSAS) for the presence of North Atlantic right whales;

(5) All Ocean Wind's vessels must transit at 10 kn or less within any active North Atlantic right whale Slow Zone (*i.e.*, Dynamic Management Areas (DMAs) or acoustically-triggered slow zone);

(6) All Ocean Wind's vessels, regardless of size, must immediately reduce speed to 10 kn or less for at least 24 hours when a North Atlantic right whale is sighted at any distance by any project-related personnel or acoustically detected by any project-related PAM system. Each subsequent observation or acoustic detection in the Project area shall trigger an additional 24-hour period. If a North Atlantic right whale is reported via any of the monitoring systems (refer back to paragraph (b)(4) of this section) within 10 kilometers (km) (6.2 miles (mi)) of a transiting vessel(s), that vessel must operate at 10 kn or less for 24 hours following the reported detection;

(7) Ocean Wind's vessels, regardless of size, must immediately reduce speed to 10 kn or less when any large whale (other than a North Atlantic right whale) is observed within 500 m (1,640 feet (ft)) of an underway vessel;

(8) If Ocean Wind's vessel(s) are traveling at speeds greater than 10 kn (*i.e.*, no speed restrictions are enacted) in a transit corridor from a port to the Lease Area, in addition to the required dedicated visual observer, Ocean Wind must monitor the transit corridor in real-time with PAM prior to and during transits. If a North Atlantic right whale is detected via visual observation or PAM within or approaching the transit corridor, all crew transfer vessels must travel at 10 kn or less for 24 hours following the detection. Each subsequent detection shall trigger a 24-hour reset. A slowdown in the transit corridor expires when there has been no further visual or acoustic detection in the transit corridor in the past 24 hours;

(9) Ocean Wind's vessels must maintain a minimum separation distance of 500 m from North Atlantic right whales (see Table 6 below). If underway, all vessels must steer a course away from any sighted North Atlantic right whale at 10 kn or less such that the 500-m minimum separation distance requirement is not violated. If a North Atlantic right whale is sighted within 500 m of an underway vessel, that vessel must reduce speed and shift the engine to neutral. Engines must not be engaged until the whale has moved outside of the vessel's path and beyond 500 m. If a whale is observed but cannot be confirmed as a species other than a North Atlantic right whale, the vessel operator must assume that it is a North Atlantic right whale and take the vessel strike avoidance measures described in this paragraph (b)(9) of this subsection;

(10) Ocean Wind's vessels must maintain a minimum separation distance of 100 m (328 ft) from sperm whales and non-North Atlantic right whale baleen whales (see Table 6 below). If one of these species is sighted within 100 m of a transiting vessel, Ocean Wind's vessel must reduce speed and shift the engine to neutral. Engines must not be engaged until the whale has moved outside of the vessel's path and beyond 100 m;

(11) Ocean Wind's vessels must maintain a minimum separation distance of 50 m (164 ft) from all delphinid cetaceans and pinnipeds with an exception made for those that approach the vessel (*i.e.*, bow-riding dolphins) (see Table 6 below). If a delphinid cetacean or pinniped is sighted within 50 m of a transiting vessel, Ocean Wind's vessel must shift the engine to neutral, with an exception made for those that approach the vessel (*e.g.*, bow-riding dolphins). Engines must not be engaged until the animal(s) has moved outside of the vessel's path and beyond 50 m;

(12) When a marine mammal(s) is sighted while Ocean Wind's vessel(s) is transiting, the vessel must take action as necessary to avoid violating the relevant separation distances (*e.g.*, attempt to remain parallel to the animal's course, slow down, and avoid abrupt changes in direction until the animal has left the area);

(13) Ocean Wind's vessels underway must not divert or alter course to approach any marine mammal. If a separation distance is triggered, any vessel underway must avoid abrupt changes in course direction and transit at 10 kn or less until the animal is outside the relevant separation distance;

(14) Ocean Wind is required to abide by other speed and approach regulations. Nothing in this subpart exempts vessels from any other applicable marine mammal speed and approach regulations;

(15) Ocean Wind must check, daily, for information regarding the establishment of mandatory or voluntary vessel strike avoidance areas (*i.e.*, DMAs, Seasonal Management Areas (SMAs), Slow Zones) and any information regarding North Atlantic right whale sighting locations;

(16) Ocean Wind must submit a North Atlantic Right Whale Vessel Strike Avoidance Plan to NMFS Office of Protected Resources for review and approval at least 90 days prior to the planned start of vessel activity. The plan must provide details on the vessel-based observer and PAM protocols for transiting vessels. If a plan is not submitted or approved by NMFS prior to vessel operations, all project vessels transiting, year round, must travel at speeds of 10-kn or less. Ocean Wind must comply with any approved North Atlantic Right Whale Vessel Strike Avoidance Plan; and

(17) Speed over ground will be used to measure all vessel speed restrictions.

(c) *WTG and OSS foundation installation*. The following requirements apply to impact pile driving activities associated with the installation of WTG and OSS foundations:

(1) Impact pile driving must not occur January 1st through April 30th. Impact pile driving must be avoided to the maximum extent practicable in December; however, it may occur if necessary to complete the project with prior approval by NMFS;

(2) Monopiles must be no larger than 11 m in diameter, representing the larger end of the monopile design. During all monopile installation, the minimum amount of hammer energy necessary to effectively and safely install and maintain the integrity of the piles must be used. Hammer energies must not exceed 4,000 kilojoules (kJ) for monopile installation. No more than two monopiles may be installed per day. Pin piles must be no larger than 5 m in diameter. During all pin pile installation, the minimum amount of hammer energy necessary to effectively and safely install and maintain the integrity of the piles must be used. Hammer energies must not exceed 2,500 kJ for pin pile installation. No more than three pin piles may be installed per day;

(3) WTG and OSS Foundation Impact Pile Driving Time of Day Restrictions:

(i) In May and November, and, if approval is granted by NMFS, December, Ocean Wind must not initiate impact pile driving of a WTG and OSS foundation pile later than 1.5 hours prior to civil sunset and earlier than 1 hour after civil sunrise (*i.e.,* pile driving may only be initiated during daylight hours) and would only be allowed to continue into darkness if stopping operations represents a risk to human health, safety, and/or pile stability;

(ii) Ocean Wind may initiate impact pile driving later than 1.5 hours prior to civil sunset through 1 hour after civil sunrise from June 1st to October 31st, annually, in accordance with a NMFS-approved Alternative Monitoring Plan for Nighttime Pile Driving;

(iii) Ocean Wind may not initiate impact pile driving later than 1.5 hours prior to civil sunset through 1 hour after civil sunrise from June 1st to October 31st without a NMFS-approved Alternative Monitoring Plan for Nighttime Pile Driving; and would only be allowed to continue to impact drive into darkness if stopping operations represents a risk to human health, safety, and/or pile stability.

(4) Ocean Wind must utilize a soft-start protocol for each impact pile driving event of all foundations by performing four to six strikes per minute at 10 to 20 percent of the maximum hammer energy, for a minimum of 20 minutes;

(5) Soft-start must occur at the beginning of impact driving and at any time following a cessation of impact pile driving of 30 minutes or longer;

(6) Ocean Wind must establish clearance and shutdown zones (Table 2), which must be measured using the radial distance around the pile being driven. If a marine mammal is detected within or about to enter the applicable clearance zones, prior to the beginning of soft-start procedures, impact pile driving must be delayed until

the animal has been visually observed exiting the clearance zone or until a specific time period has elapsed with no further sightings. The specific time periods are 15 minutes for small odontocetes and pinnipeds, and 30 minutes for all other species;

(7) For North Atlantic right whales, any visual observation or acoustic detection must trigger a delay to the commencement of pile driving. The clearance zone may only be declared clear if no North Atlantic right whale acoustic or visual detections have occurred within the clearance zone during the 60-minute monitoring period (of which 30 consecutive minutes must be determined to be clear of marine mammals directly prior to commencing these activities);

(8) Ocean Wind must deploy at least two functional noise abatement systems that reduce noise levels to the modeled harassment isopleths, assuming 10-dB attenuation, during all impact pile driving:

(i) A single bubble curtain must not be used;

(ii) Any bubble curtain(s) must distribute air bubbles using an air flow rate of at least 0.5 m^3/(minute*m). The bubble curtain(s) must surround 100 percent of the piling perimeter throughout the full depth of the water column. In the unforeseen event of a single compressor malfunction, the offshore personnel operating the bubble curtain(s) must adjust the air supply and operating pressure such that the maximum possible sound attenuation performance of the bubble curtain(s) is achieved;

(iii) The lowest bubble ring must be in contact with the seafloor for the full circumference of the ring, and the weights attached to the bottom ring must ensure 100-percent seafloor contact;

(iv) No parts of the ring or other objects may prevent full seafloor contact with a bubble curtain ring;

(v) Construction contractors must train personnel in the proper balancing of airflow to the bubble curtain ring. Ocean Wind must provide NMFS Office of Protected Resources with a bubble curtain performance test and maintenance report to review within 72 hours after each pile using a bubble curtain is installed. Additionally, a full maintenance check (*e.g.*, manually clearing holes) must occur prior to each pile being installed;

(vi) Corrections to the bubble ring(s) to meet the performance standards in this subsection must occur prior to impact pile driving. If Ocean Wind uses a noise mitigation device in addition to the bubble curtain, Ocean Wind must maintain similar quality control measures as described in this subsection.

(9) Ocean Wind must utilize NMFS-approved PAM systems, as described in paragraph(c)(17) of this section. The PAM system components (*i.e.*, acoustic buoys) must not be placed closer than 1 km (0.62 mi) to the pile being driven so

that the activities do not mask the PAM system. Ocean Wind must provide an adequate demonstration of and justification for the detection range of the system they plan to deploy while considering potential masking from concurrent pile-driving and vessel noise. The PAM system must be able to detect a vocalization of North Atlantic right whales up to 10 km (6.2 mi).

(10) Ocean Wind must utilize PSO(s) and PAM operator(s), as described in section 4(c) of this LOA. At least three on-duty PSOs must be on the pile driving platform. Additionally, two dedicated-PSO vessels must be used at least 60 minutes before, during, and 30 minutes after all pile driving, and each dedicated-PSO vessel must have at least three PSOs on duty during these time periods. Ocean Wind may request NMFS approval to use alternative technology (*e.g.,* drones) in lieu of one or two of the dedicated PSO vessels that provide similar marine mammal detection capabilities.

(11) If a marine mammal is detected (visually or acoustically) entering or within the respective shutdown zone after pile driving has begun, the PSO or PAM operator must call for a shutdown of pile driving and Ocean Wind must stop pile driving immediately, unless shutdown is not practicable due to imminent risk of injury or loss of life to an individual or risk of damage to a vessel that creates risk of injury or loss of life for individuals, or the lead engineer determines there is pile refusal or pile instability. If pile driving is not shutdown in one of these situations, Ocean Wind must reduce hammer energy to the lowest level practicable and the reason(s) for not shutting down must be documented and reported to NMFS Office of Protected Resources within the applicable monitoring reports (*e.g.*, weekly, monthly).

(12) A visual observation or acoustic detection of a North Atlantic right whale at any distance triggers shutdown requirements under paragraph (c)(12) of this section. If pile driving has been shut down due to the presence of a North Atlantic right whale, pile driving may not restart until the North Atlantic right whale has neither been visually or acoustically detected for 30 minutes;

(13) If pile driving has been shut down due to the presence of a marine mammal other than a North Atlantic right whale, pile driving must not restart until either the marine mammal(s) has voluntarily left the specific clearance zones and has been visually or acoustically confirmed beyond that clearance zone, or, when specific time periods have elapsed with no further sightings or acoustic detections have occurred. The specific time periods are 15 minutes for small odontocetes and pinnipeds, and 30 minutes for all other marine mammal species. In cases where these criteria are not met, pile driving may restart only if necessary to maintain pile stability at which time Ocean Wind must use the lowest hammer energy practicable to maintain stability;

(14) Ocean Wind must conduct sound field verification (SFV) measurements during pile driving activities associated with the installation of, at minimum, the first three monopile foundations. SFV measurements must continue until at least three consecutive piles demonstrate noise levels are at or below those modeled,

assuming 10 decibels (dB) of attenuation. Subsequent SFV measurements are also required should larger piles be installed or if additional piles are driven that may produce louder sound fields than those previously measured (*e.g.*, higher hammer energy, greater number of strikes, *etc.*). SFV measurements must be conducted as follows:

(i) Measurements must be made at a minimum of four distances from the pile(s) being driven, along a single transect, in the direction of lowest transmission loss (*i.e.*, projected lowest transmission loss coefficient), including, but not limited to, 750 m (2,460 ft) and three additional ranges selected such that measurement of Level A harassment and Level B harassment isopleths are accurate, feasible, and avoids extrapolation. At least one additional measurement at an azimuth 90 degrees from the array at 750 m must be made. At each location, there must be a near bottom and mid-water column hydrophone (measurement systems);

(ii) The recordings must be continuous throughout the duration of all pile driving of each foundation;

(iii) The SFV measurement systems must have a sensitivity appropriate for the expected sound levels from pile driving received at the nominal ranges throughout the installation of the pile. The frequency range of SFV measurement systems must cover the range of at least 20 hertz (Hz) to 20 kilohertz (kHz). The SFV measurement systems must be designed to have omnidirectional sensitivity so that the broadband received level of all pile driving exceeds the system noise floor by at least 10 dB. The dynamic range of the SFV measurement system must be sufficient such that at each location, and the signals avoid poor signal-to-noise ratios for low amplitude signals and avoid clipping, nonlinearity, and saturation for high amplitude signals;

(iv) All hydrophones used in SFV measurements systems are required to have undergone a full system, traceable laboratory calibration conforming to International Electrotechnical Commission (IEC) 60565, or an equivalent standard procedure, from a factory or accredited source to ensure the hydrophone receives accurate sound levels, at a date not to exceed 2 years before deployment. Additional *in-situ* calibration checks using a pistonphone are required to be performed before and after each hydrophone deployment. If the measurement system employs filters via hardware or software (*e.g.*, high-pass, low-pass, *etc*.), which is not already accounted for by the calibration, the filter performance (*i.e.*, the filter's frequency response) must be known, reported, and the data corrected before analysis.

(v) Ocean Wind must be prepared with additional equipment (hydrophones, recording devices, hydrophone calibrators, cables, batteries, *etc*.), which exceeds the amount of equipment necessary to perform the measurements, such that technical issues can be mitigated before measurement;

(vi) Ocean Wind must submit 48-hour interim reports after each foundation is measured (see section 4(g)(8) of this LOA for interim and final reporting requirements);

(vii) Ocean Wind must not exceed modeled distances to NMFS marine mammal Level A harassment and Level B harassment thresholds, assuming 10-dB attenuation, for foundation installation. If any of the interim SFV measurement reports submitted for the first three monopiles indicate measured levels exceed the modeled distances to NMFS marine mammal Level A harassment and Level B harassment thresholds assuming 10-dB attenuation, then Ocean Wind must implement additional sound attenuation measures on all subsequent foundations. Ocean Wind must also increase clearance and shutdown zone sizes to those identified by NMFS until SFV measurements on at least three additional foundations demonstrate acoustic distances to harassment thresholds meet or are less than those modeled assuming 10-dB of attenuation. Ocean Wind must optimize the sound attenuation systems (*e.g.*, ensure hose maintenance, pressure testing, *etc*.) to meet noise levels modeled, assuming 10-dB attenuation, within three piles or else foundation installation activities must cease until NMFS and Ocean Wind can evaluate the situation and ensure future piles will not exceed noise levels modeled assuming 10-dB attenuation;

(viii) If, after additional measurements conducted pursuant to requirements of paragraph (15)(vii) of this section, acoustic measurements indicate that ranges to isopleths corresponding to the Level A harassment and Level B harassment thresholds are less than the ranges predicted by modeling (assuming 10-dB attenuation), Ocean Wind may request to NMFS Office of Protected Resources a modification of the clearance and shutdown zones. For NMFS Office of Protected Resources to consider a modification request for reduced zone sizes, Ocean Wind must have conducted SFV measurements demonstrating the required acoustic zone sizes have been met on an additional three foundations and ensure that subsequent foundations would be installed under conditions that are predicted to produce smaller harassment zones than those modeled assuming 10-dB of attenuation;

(ix) Ocean Wind must conduct SFV measurements upon commencement of turbine operations to estimate turbine operational source levels, in accordance with a NMFS-approved Foundation Installation Pile Driving SFV Plan. SFV must be conducted in the same manner as previously described in paragraph (c)(15) of this section, with appropriate adjustments to measurement distances, number of hydrophones, and hydrophone sensitivities being made, as necessary; and

(x) Ocean Wind must submit a SFV Plan to NMFS Office of Protected Resources for review and approval at least 180 days prior to planned start of foundation installation activities and abide by the Plan if approved. At

minimum, the SFV Plan must describe how Ocean Wind would ensure that the first three monopile foundation installation sites selected for SFV measurements are representative of the rest of the monopile installation sites such that future pile installation events are anticipated to produce similar or lower sound levels to those piles measured. In the case that these sites/scenarios are not determined to be representative of all other pile installation sites, Ocean Wind must include information in the SFV Plan on how additional sites/scenarios would be selected for SFV measurements. The SFV Plan must also include methodology for collecting, analyzing, and preparing SFV measurement data for submission to NMFS Office of Protected Resources and describe how the effectiveness of the sound attenuation methodology would be evaluated based on the results. SFV for pile driving may not occur until NMFS approves the SFV Plan for this activity.

(15) Ocean Wind must submit a Foundation Installation Pile Driving Marine Mammal Monitoring Plan to NMFS Office of Protected Resources for review and approval at least 180 days prior to planned start of pile driving and abide by the Plan if approved. Ocean Wind must obtain both NMFS Office of Protected Resources and NMFS Greater Atlantic Regional Fisheries Office Protected Resources Division's concurrence with this Plan prior to the start of any pile driving. The Plan must include a description of all monitoring equipment and PAM and PSO protocols (including number and location of PSOs) for all pile driving. No foundation pile installation can occur without NMFS' approval of the Plan; and

(16) Ocean Wind must submit a Passive Acoustic Monitoring Plan (PAM Plan) to NMFS Office of Protected Resources for review and approval at least 180 days prior to the planned start of foundation installation activities (impact pile driving) and abide by the Plan if approved. Ocean Wind must obtain both NMFS Office of Protected Resources and NMFS Greater Atlantic Regional Fisheries Office Protected Resources Division's concurrence with this Plan prior to the start of any pile driving. The PAM Plan must include a description of all proposed PAM equipment, address how the proposed passive acoustic monitoring must follow standardized measurement, processing methods, reporting metrics, and metadata standards for offshore wind. The Plan must describe all proposed PAM equipment, procedures, and protocols including proof that vocalizing North Atlantic right whales will be detected within the clearance and shutdown zones.

(d) *Cofferdam and goal post installation and removal.* The following requirements apply to the installation and removal of cofferdams and goal posts at the cable landfall construction sites:

(1) Installation and removal of cofferdams and goal posts must not occur during nighttime hours (defined as the hours between 1.5 hours prior to civil sunset and 1 hour after civil sunrise);

(2) All installation and removal of sheet piles for cofferdams and casing pipes for goal posts must only occur for up to 12 hours for each cofferdam and up to 1 hour daily for each goal post (within a single 24-hour period);

(3) Ocean Wind must establish and implement clearance and shutdown zones (Table 3) for the installation and removal of cofferdams and goal posts using visual monitoring. These zones must be measured using the radial distance from the cofferdam and goal post being installed and/or removed;

(4) Ocean Wind must utilize PSO(s), as described in section 4(d) of this LOA. At least two on-duty PSOs must monitor for marine mammals at least 30 minutes before, during, and 30 minutes after vibratory pile driving associated with cofferdam and casing pipe installation; and

(5) If a marine mammal is observed entering or within the respective shutdown zone after vibratory pile driving has begun, the PSO must call for a shutdown of vibratory pile driving. Ocean Wind must stop vibratory pile driving immediately unless shutdown is not practicable due to imminent risk of injury or loss of life to an individual or if there is a risk of damage to the vessel that would create a risk of injury or loss of life for individuals or if the lead engineer determines there is refusal or instability. In any of these situations, Ocean Wind must document the reason(s) for not shutting down and report the information to NMFS Office of Protected Resources in the next available weekly report (as described in section 4(g) of this LOA).

(e) *UXO/MEC detonations*. The following requirements apply to all Unexploded Ordnances and Munitions and Explosives of Concern (UXO/MEC) detonations:

(1) Upon encountering an UXO/MEC, Ocean Wind may only resort to high-order removal (*i.e.*, detonation) if all other means of removal are impracticable;

(2) Ocean Wind may detonate a maximum of 10 UXO/MECs, of varying sizes but no larger than 1,000 pounds (lbs; 454 kilograms (kg)) charge weight (*i.e.*, E12), over the effective period of this rulemaking and LOA;

(3) Ocean Wind must not detonate UXO/MECs from November 1st through April 30th, annually;

(4) UXO/MEC detonations must only occur during daylight hours;

(5) No more than one detonation may occur within a 24-hour period;

(6) Ocean Wind must establish and implement clearance zones (Table 4) for UXO/MEC detonation using both visual and acoustic monitoring, as described in paragraphs (c)(7), (8), and (12) through (14) of this section. UXO/MEC clearance zones are specific to the known charge weight size of the UXO/MEC to be detonated; if charge weight is unknown or uncertain then the largest zone size must be used;

(7) Ocean Wind must utilize PSO(s) and PAM operator(s), as described in section 4(c) of this LOA. At least three PSOs on each of two dedicated PSO vessels must be used for all detonations with clearance zones less than 5 km (3.1 mi). If the clearance zone is larger than 5 km, at least one dedicated PSO vessel (with at least three on-duty PSOs) and an aerial platform (with at least two on-duty PSOs) must be used. Clearance zone size is measured using the radial distance from the UXO/MEC to be detonated;

(8) Ocean Wind must utilize NMFS-approved PAM systems per a NMFS-approved PAM Plan, as described in (c)(17) of this section.

(9) Ocean Wind must deploy at least a double big bubble curtain during all UXO/MEC detonations. The bubble curtain must be deployed at a distance that avoids damage to the hose nozzles:

(i) Any bubble curtain(s) must distribute air bubbles using an air flow rate of at least 0.5 m^3/(minute*m). The bubble curtain(s) must surround 100 percent of the piling perimeter throughout the full depth of the water column;

(ii) The lowest bubble ring must be in contact with the seafloor for the full circumference of the ring, and the weights attached to the bottom ring must ensure 100-percent seafloor contact;

(iii) No parts of the ring or other objects may prevent full seafloor contact with a bubble curtain ring;

(iv) Construction contractors must train personnel in the proper balancing of airflow to the bubble curtain ring. Ocean Wind must provide NMFS Office of Protected Resources with a bubble curtain performance test and maintenance report to review within 72 hours after each UO/MEC is detonated. Additionally, a full maintenance check (*e.g.*, manually clearing holes) must occur prior to each UXO/MEC detonation;

(v) Corrections to the bubble ring(s) to meet the performance standards in this paragraph (e)(9) must occur prior to UXO/MEC detonation.

(10) Ocean Wind must conduct SFV during all UXO/MEC detonations as described in paragraph (c)(15) of this section and deploy a pressure transducer;

(11) Clearance zones must be fully visible for at least 60 minutes and all marine mammal(s) must be confirmed to be outside of the clearance zone for at least 30 minutes prior to detonation. PAM must also be conducted for at least 60 minutes and the zone must be acoustically cleared during this time. If a marine mammal is observed entering or within the clearance zone prior to denotation, the activity must be delayed. Detonation may only commence if all marine mammals have been confirmed to have voluntarily left the clearance zones and been visually confirmed to be beyond the clearance zone, or when 60 minutes have elapsed without any redetections for whales (including the North Atlantic right whale) or

15 minutes have elapsed without any redetections of delphinids, harbor porpoises, or seals;

(12) For UXO/MEC detonations, Ocean Wind must follow all SFV measures described in paragraphs (c)(15) of this section and section 3(c)(15)(i) through (vi), as well as the measures below:

(i) Ocean Wind must not exceed modeled distances to NMFS marine mammal Level A harassment and Level B harassment thresholds, assuming 10-dB attenuation, for UXO/MEC detonations. If any of the interim SFV measurement reports submitted for any UXO/MEC detonations indicate the modeled distances to NMFS marine mammal Level A harassment and Level B harassment thresholds assuming 10-dB attenuation for future detonations will be exceeded, then Ocean Wind must implement additional sound attenuation measures on all subsequent UXO/MEC detonations, including but not limited to the deployment of additional NAS to assist in achieving measurements in alignment with the modeled ranges. Ocean Wind must also increase clearance zone sizes to those identified by NMFS until SFV measurements on UXOs/MECs demonstrate distances to harassment thresholds will be met or will be less than those modeled assuming 10 dB of attenuation. Ocean Wind must optimize the sound attenuation systems (*e.g.*, ensure hose maintenance, pressure testing, *etc*.) to meet noise levels modeled, assuming 10 dB of attenuation, for UXOs/MECs of the same charge weight or else no detonation activities must occur until NMFS and Ocean Wind can evaluate the situation and ensure future UXO/MEC detonations will not exceed noise levels modeled, assuming 10-dB attenuation;

(ii) Ocean Wind must submit a SFV Plan for UXO/MEC detonations to NMFS Office of Protected Resources for review and approval at least 180 days prior to planned start of UXO/MEC detonation activities and abide by the Plan if approved. Ocean Wind must obtain both NMFS Office of Protected Resources and NMFS Greater Atlantic Regional Fisheries Office Protected Resources Division's concurrence with this Plan prior to the start of any UXO/MEC detonations. The SFV Plan must include methodology for collecting, analyzing, and preparing SFV measurement data for submission to NMFS Office of Protected Resources and describe how the effectiveness of the sound attenuation methodology would be evaluated based on the results. For recommended SFV protocols for UXO/MEC, please consult the National Physical Laboratory (NPL) *Protocol for In-Situ Underwater Measurement of Explosive Ordnance Disposal for UXO* (2020);

(iii) Ocean Wind must submit a UXO/MEC Marine Mammal Monitoring Plan to NMFS Office of Protected Resources for review and approval at least 180 days prior to planned start of UXO/MEC detonation, respectively, and abide by the Plan if approved. Ocean Wind must obtain both NMFS Office of Protected Resources and NMFS Greater Atlantic Regional

Fisheries Office Protected Resources Division's concurrence with this Plan prior to the start of any UXO/MEC detonations. The Plan must include a description of all monitoring equipment and PAM and PSO protocols (including number and location of PSOs) for all UXO/MEC detonations. The Plan must include final UXO/MEC detonation project design (*e.g.*, number and type of UXO/MECs, removal method(s), charge weight(s), anticipated start date, *etc*.) and all information related to PAM and PSO monitoring protocols for UXO/MEC activities. The Plan must detail all plans and procedures for sound attenuation as well as for monitoring marine mammals during all UXO/MEC detonations. No UXO/MEC detonations can occur without NMFS' approval of the Plan; and

(iv) Ocean Wind must submit a Passive Acoustic Monitoring Plan (PAM Plan) to NMFS Office of Protected Resources for review and approval at least 180 days prior to the planned start of UXO/MEC detonations and abide by the Plan if approved. Ocean Wind must obtain both NMFS Office of Protected Resources and NMFS Greater Atlantic Regional Fisheries Office Protected Resources Division's concurrence with this Plan prior to the start of any UXO/MEC detonations. The PAM Plan must include a description of all proposed PAM equipment, address how the proposed passive acoustic monitoring must follow standardized measurement, processing methods, reporting metrics, and metadata standards for offshore wind. The Plan must describe all proposed PAM equipment, procedures, and protocols including proof that vocalizing North Atlantic right whales will be detected within the clearance and shutdown zones.

(f) *HRG surveys*. The following requirements apply to HRG surveys operating sub-bottom profilers (SBPs) (*i.e.*, boomers, sparkers, and Compressed High Intensity Radiated Pulse (CHIRPS)):

(1) Ocean Wind must establish and implement clearance and shutdown zones (Table 5) for HRG surveys using visual monitoring, as described in paragraph (c) of this section;

(2) Ocean Wind must utilize PSO(s), as described in section 4(f) of this LOA;

(3) Ocean Wind must abide by the relevant Project Design Criteria (PDCs 4, 5, and 7) of the programmatic consultation completed by NMFS' Greater Atlantic Regional Fisheries Office on June 29, 2021 (revised September 2021), pursuant to section 7 of the Endangered Species Act (ESA). To the extent that any relevant Best Management Practices (BMPs) described in these PDCs are more stringent than the requirements herein, those BMPs supersede these requirements;

(4) SBPs (hereinafter referred to as "acoustic sources") must be deactivated when not acquiring data or preparing to acquire data, except as necessary for testing. Acoustic sources must be used at the lowest practicable source level to meet the

survey objective, when in use, and must be turned off when they are not necessary for the survey;

(5) Ocean Wind is required to ramp-up acoustic sources prior to commencing full power, unless the equipment operates on a binary on/off switch, and ensure visual clearance zones are fully visible (*e.g.*, not obscured by darkness, rain, fog, *etc.*) and clear of marine mammals, as determined by the Lead PSO, for at least 30 minutes immediately prior to the initiation of survey activities using acoustic sources specified in the LOA. Ramp-up and activation must be delayed if a marine mammal(s) enters its respective shutdown zone. Ramp-up and activation may only be reinitiated if the animal(s) has been observed exiting its respective shutdown zone or until 15 minutes for small odontocetes and pinnipeds, and 30 minutes for all other species, has elapsed with no further sightings;

(6) Prior to a ramp-up procedure starting or activating acoustic sources, the acoustic source operator (operator) must notify a designated PSO of the planned start of ramp-up as agreed upon with the Lead PSO. The notification time should not be less than 60 minutes prior to the planned ramp-up or activation in order to allow the PSOs time to monitor the clearance zone(s) for 30 minutes prior to the initiation of ramp-up or activation (pre-start clearance). During this 30-minute pre-start clearance period, the entire applicable clearance zones must be visible, except as indicated in paragraph (f)(12) of this section;

(7) Ramp-ups must be scheduled so as to minimize the time spent with the source activated;

(8) A PSO conducting pre-start clearance observations must be notified again immediately prior to reinitiating ramp-up procedures and the operator must receive confirmation from the PSO to proceed;

(9) Ocean Wind must implement a 30-minute clearance period of the clearance zones immediately prior to the commencing of the survey or when there is more than a 30-minute break in survey activities or PSO monitoring. A clearance period is a period when no marine mammals are detected in the relevant zone;

(10) If a marine mammal is observed within a clearance zone during the clearance period, ramp-up or acoustic surveys may not begin until the animal(s) has been observed voluntarily exiting its respective clearance zone or until a specific time period has elapsed with no further sighting. The specific time period is 15 minutes for small odontocetes and pinnipeds, and 30 minutes for all other species;

(11) In any case when the clearance process has begun in conditions with good visibility, including via the use of night vision equipment (infrared (IR)/thermal camera), and the Lead PSO has determined that the clearance zones are clear of marine mammals, survey operations would be allowed to commence (*i.e.*, no delay is required) despite periods of inclement weather and/or loss of daylight. Ramp-up may occur at times of poor visibility, including nighttime, if appropriate

visual monitoring has occurred with no detections of marine mammals in the 30 minutes prior to beginning ramp-up;

(12) Once the survey has commenced, Ocean Wind must shut down acoustic sources if a marine mammal enters a respective shutdown zone, except in cases when the shutdown zones become obscured for brief periods due to inclement weather, survey operations would be allowed to continue (*i.e.*, no shutdown is required) so long as no marine mammals have been detected. The shutdown requirement does not apply to small delphinids of the following genera: *Delphinus, Stenella, Lagenorhynchus,* and *Tursiops*. If there is uncertainty regarding the identification of a marine mammal species (*i.e.*, whether the observed marine mammal belongs to one of the delphinid genera for which shutdown is waived), the PSOs must use their best professional judgment in making the decision to call for a shutdown. Shutdown is required if a delphinid that belongs to a genus other than those specified in this paragraph (f)(12) of this section is detected in the shutdown zone;

(13) If an acoustic source has been shut down due to the presence of a marine mammal, the use of an acoustic source may not commence or resume until the animal(s) has been confirmed to have left the Level B harassment zone or until a full 15 minutes (for small odontocetes and seals) or 30 minutes (for all other marine mammals) have elapsed with no further sighting;

(14) Ocean Wind must immediately shut down any acoustic source if a marine mammal is sighted entering or within its respective shutdown zones. If there is uncertainty regarding the identification of a marine mammal species (*i.e.*, whether the observed marine mammal belongs to one of the delphinid genera for which shutdown is waived), the PSOs must use their best professional judgment in making the decision to call for a shutdown. Shutdown is required if a delphinid that belongs to a genus other than those specified in paragraph (f)(12) of this section is detected in the shutdown zone; and

(15) If an acoustic source is shut down for a period longer than 30 minutes, all clearance and ramp-up procedures must be initiated. If an acoustic source is shut down for reasons other than mitigation (*e.g.*, mechanical difficulty) for less than 30 minutes, acoustic sources may be activated again without ramp-up only if PSOs have maintained constant observation and no additional detections of any marine mammal occurred within the respective shutdown zones.

(g) *Fisheries monitoring surveys*. The following requirements apply to fishery monitoring surveys:

(1) Survey gear must be deployed as soon as possible once the vessel arrives on station. Gear must not be deployed if there is a risk of interaction with marine mammals. Gear may be deployed after 15 minutes of no marine mammal sightings within 1 nautical mile (nmi; 1,852 m) of the sampling station;

(2) Ocean Wind and/or its cooperating institutions, contracted vessels, or commercially hired captains must implement the following “move-on” rule: If

marine mammals are sighted within 1 nmi of the planned location and 15 minutes before gear deployment, then Ocean Wind and/or its cooperating institutions, contracted vessels, or commercially hired captains, as appropriate, must move the vessel away from the marine mammal to a different section of the sampling area. If, after moving on, marine mammals are still visible from the vessel, Ocean Wind and its cooperating institutions, contracted vessels, or commercially hired captains must move again or skip the station;

(3) If a marine mammal is deemed to be at risk of interaction after the gear is deployed or set, all gear must be immediately removed from the water. If marine mammals are sighted before the gear is fully removed from the water, the vessel must slow its speed and maneuver the vessel away from the animals to minimize potential interactions with the observed animal;

(4) Ocean Wind must maintain visual marine mammal monitoring effort during the entire period of time that gear is in the water (*i.e.*, throughout gear deployment, fishing, and retrieval);

(5) All fisheries monitoring gear must be fully cleaned and repaired (if damaged) before each use/deployment;

(6) Ocean Wind's fixed gear must comply with the Atlantic Large Whale Take Reduction Plan regulations at 50 CFR 229.32 during fisheries monitoring surveys;

(7) Trawl tows must be limited to a maximum of a 20-minute trawl time at 3.0 kn;

(8) All gear must be emptied as close to the deck/sorting area and as quickly as possible after retrieval;

(9) During trawl surveys, vessel crew must open the codend of the trawl net close to the deck in order to avoid injury to animals that may be caught in the gear;

(10) Baited remote underwater video (BRUV) sampling must limit soak duration to 60 minutes or less, BRUVs must use a weighted line attached to surface and subsurface buoys that must hold a stereo-camera system in the water column and a system at the seafloor, and the vessel must remain on location with the gear while it is in use;

(11) Each chevron trap must have a vertical buoy line and must limit soak duration to 90 minutes or less;

(12) All fishery survey-related lines must include the breaking strength of all lines being less than 1,700 lbs (771 kg). This may be accomplished by using whole buoy line that has a breaking strength of 1,700 lbs; or buoy line with weak inserts that result in line having an overall breaking strength of 1,700 lbs;

(13) During any survey that uses vertical lines, buoy lines must be weighted and must not float at the surface of the water and all groundlines must consist of sinking lines. All groundlines must be composed entirely of sinking lines. Buoy lines

must utilize weak links. Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots. The attachment of buoys, toggles, or other floatation devices to groundlines is prohibited;

(14) All in-water survey gear, including buoys, must be properly labeled with the scientific permit number or identification as Ocean Wind's research gear. All labels and markings on the gear, buoys, and buoy lines must also be compliant with the applicable regulations, and all buoy markings must comply with instructions received by the NOAA Greater Atlantic Regional Fisheries Office Protected Resources Division;

(15) All survey gear must be removed from the water whenever not in active survey use (*i.e.*, no wet storage); and

(16) All reasonable efforts, that do not compromise human safety, must be undertaken to recover gear.

4. Monitoring and Reporting Requirements:

Ocean Wind must implement the following monitoring and reporting measures when conducting the specified activities (see also 50 CFR § 217.265):

(a) (a) *Protected species observer (PSO) and passive acoustic monitoring (PAM) operator qualifications.* Ocean Wind must implement the following measures applicable to PSOs and PAM operators:

(1) Ocean Wind must use independent, NMFS-approved PSOs and PAM operators, meaning that the PSOs and PAM operators must be employed by a third-party observer provider, must have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant crew with regard to the presence of protected species and mitigation requirements;

(2) All PSOs and PAM operators must have successfully attained a bachelor's degree from an accredited college or university with a major in one of the natural sciences, a minimum of 30 semester hours or equivalent in the biological sciences, and at least one undergraduate course in math or statistics. The educational requirements may be waived if the PSO or PAM operator has acquired the relevant skills through a suitable amount of alternate experience. Requests for such a waiver must be submitted to NMFS Office of Protected Resources and must include written justification containing alternative experience. Alternate experience that may be considered includes, but is not limited to: previous work experience conducting academic, commercial, or government-sponsored marine mammal visual and/or acoustic surveys; or previous work experience as a PSO/PAM operator;

(3) PSOs must have visual acuity in both eyes (with correction of vision being permissible) sufficient enough to discern moving targets on the water's surface

with the ability to estimate the target size and distance (binocular use is allowable); ability to conduct field observations and collect data according to the assigned protocols; sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations; writing skills sufficient to document observations, including but not limited to, the number and species of marine mammals observed, the dates and times of when in-water construction activities were conducted, the dates and time when in-water construction activities were suspended to avoid potential incidental take of marine mammals from construction noise within a defined shutdown zone, and marine mammal behavior; and the ability to communicate orally, by radio, or in-person, with project personnel to provide real-time information on marine mammals observed in the area;

(4) All PSOs must be trained in northwestern Atlantic Ocean marine mammal identification and behaviors and must be able to conduct field observations and collect data according to assigned protocols. Additionally, PSOs must have the ability to work with all required and relevant software and equipment necessary during observations (as described in paragraphs (b)(6) and (b)(7) of this section);

(5) All PSOs and PAM operators must successfully complete a relevant training course within the last 5 years, including obtaining a certificate of course completion;

(6) PSOs and PAM operators are responsible for obtaining NMFS' approval. NMFS may approve PSOs and PAM operators as conditional or unconditional. A conditionally-approved PSO or PAM operator may be one who has completed training in the last 5 years but has not yet attained the requisite field experience. An unconditionally approved PSO or PAM operator is one who has completed training within the last 5 years and attained the necessary experience (*i.e.*, demonstrate experience with monitoring for marine mammals at clearance and shutdown zone sizes similar to those produced during the respective activity). Lead PSO or PAM operators must be unconditionally approved and have a minimum of 90 days in an northwestern Atlantic Ocean offshore environment performing the role (either visual or acoustic), with the conclusion of the most recent relevant experience not more than 18 months previous. A conditionally approved PSO or PAM operator must be paired with an unconditionally approved PSO or PAM operator;

(7) PSOs for cable landfall construction (*i.e.*, vibratory pile installation and removal) and HRG surveys may be unconditionally or conditionally approved. PSOs and PAM operators for foundation installation and UXO/MEC activities must be unconditionally approved;

(8) At least one on-duty PSO and PAM operator, where applicable, for each activity (*e.g.,* impact pile driving, vibratory pile driving, UXO/MEC detonation activities, and HRG surveys) must be designated as the Lead PSO or Lead PAM operator;

(9) Ocean Wind must submit NMFS previously approved PSOs and PAM operators to NMFS Office of Protected Resources for review and confirmation of their approval for specific roles at least 30 days prior to commencement of the activities requiring PSOs/PAM operators or 15 days prior to when new PSOs/PAM operators are required after activities have commenced;

(10) For prospective PSOs and PAM operators not previously approved, or for PSOs and PAM operators whose approval is not current, Ocean Wind must submit resumes for approval at least 60 days prior to PSO and PAM operator use. Resumes must include information related to relevant education, experience, and training, including dates, duration, location, and description of prior PSO or PAM operator experience. Resumes must be accompanied by relevant documentation of successful completion of necessary training;

(11) PAM operators are responsible for obtaining NMFS approval. To be approved as a PAM operator, the person must meet the following qualifications: the PAM operator must demonstrate that they have prior experience with real-time acoustic detection systems and/or have completed specialized training for operating PAM systems and detecting and identifying Atlantic Ocean marine mammals sounds, in particular: North Atlantic right whale sounds, humpback whale sounds, and how to deconflict them from similar North Atlantic right whale sounds, and other co-occurring species' sounds in the area including sperm whales; must be able to distinguish between whether a marine mammal or other species sound is detected, possibly detected, not detected and similar terminology must be used across companies/projects; where localization of sounds or deriving bearings and distance are possible, the PAM operators need to have demonstrated experience in using this technique; PAM operators must be independent observers (*i.e.*, not construction personnel); PAM operators must demonstrate experience with relevant acoustic software and equipment; PAM operators must have the qualifications and relevant experience/training to safely deploy and retrieve equipment and program the software, as necessary; PAM operators must be able to test software and hardware functionality prior to operation; and PAM operators must have evaluated their acoustic detection software using the PAM Atlantic baleen whale annotated data set available at National Centers for Environmental Information (NCEI) and provide evaluation/performance metric;

(12) PAM operators must be able to review and classify acoustic detections in real-time (prioritizing North Atlantic right whales and noting detection of other cetaceans) during the real-time monitoring periods;

(13) PSOs may work as PAM operators and vice versa, pending NMFS-approval; however, they may only perform one role at any one time and must not exceed work time restrictions, which must be tallied cumulatively; and

(14) All PSOs and PAM operators must complete a Permits and Environmental Compliance Plan training and a 2-day refresher session that must be held with the PSO provider and Project compliance representative(s) prior to the start of in-

water project activities (*e.g.*, HRG survey, foundation installation, cable landfall activities, UXO/MEC detonations, *etc*.).

(b) *General PSO and PAM operator requirements.* The following measures apply to PSOs and PAM operators and must be implemented by Ocean Wind:

(1) PSOs must monitor for marine mammals prior to, during, and following impact pile driving, vibratory pile driving, UXO/MEC detonation activities, and HRG surveys that use sub-bottom profilers (with specific monitoring durations and needs described in paragraphs (c) through (f) of this section, respectively). Monitoring must be done while free from distractions and in a consistent, systematic, and diligent manner;

(2) For foundation installation and UXO/MEC detonation, PSOs must visually clear (*i.e.*, confirm no observations of marine mammals) the entire minimum visibility zone for a full 30 minutes immediately prior to commencing activities. For cable landfall activities (*e.g*., cofferdams and goal posts) and HRG surveys, which do not have a minimum visibility zone, the entire clearance zone must be visually cleared and as much of the Level B harassment zone as possible;

(3) All PSOs must be located at the best vantage point(s) on any platform, as determined by the Lead PSO, in order to obtain 360-degree visual coverage of the entire clearance and shutdown zones around the activity area, and as much of the Level B harassment zone as possible. PAM operators may be located on a vessel or remotely on-shore, the PAM operator(s) must assist PSOs in ensuring full coverage of the clearance and shutdown zones. The PAM operator must monitor to and past the clearance zone for large whales;

(4) All on-duty PSOs must remain in real-time contact with the on-duty PAM operator(s), PAM operators must immediately communicate all acoustic detections of marine mammals to PSOs, including any determination regarding species identification, distance, and bearing (where relevant) relative to the pile being driven and the degree of confidence (*e.g.*, possible, probable detection) in the determination. All on-duty PSOs and PAM operator(s) must remain in contact with the on-duty construction personnel responsible for implementing mitigations (*e.g*., delay to pile driving or UXO/MEC detonation) to ensure communication on marine mammal observations can easily, quickly, and consistently occur between all on-duty PSOs, PAM operator(s), and on-water Project personnel;

(5) The PAM operator must inform the Lead PSO(s) on duty of animal detections approaching or within applicable ranges of interest to the activity occurring via the data collection software system (*i.e.*, Mysticetus or similar system) who must be responsible for requesting that the designated crewmember implement the necessary mitigation procedures (*i.e.*, delay);

(6) PSOs must use high magnification (25x) binoculars, standard handheld (7x) binoculars, and the naked eye to search continuously for marine mammals. During foundation installation and UXO/MEC detonations, at least two PSOs on

the pile driving and detonation-dedicated PSO vessel must be equipped with functional Big Eye binoculars (*e.g.*, 25 x 150; 2.7 view angle; individual ocular focus; height control); these must be pedestal mounted on the deck at the best vantage point that provides for optimal sea surface observation and PSO safety. PAM operators must have the appropriate equipment (*i.e.*, a computer station equipped with a data collection software system available wherever they are stationed) and use a NMFS-approved PAM system to conduct monitoring. PAM systems are approved through the PAM Plan as described in section 3(c)(17) of this LOA;

(7) During periods of low visibility (*e.g.*, darkness, rain, fog, poor weather conditions, *etc*.), PSOs must use alternative technology (*i.e.*, infrared or thermal cameras) to monitor the clearance and shutdown zones as approved by NMFS; and

(8) PSOs and PAM operators must not exceed 4 consecutive watch hours on duty at any time, must have a 2-hour (minimum) break between watches, and must not exceed a combined watch schedule of more than 12 hours in a 24-hour period. If the schedule includes PSOs and PAM operators on-duty for 2-hour shifts, a minimum 1-hour break between watches must be allowed.

(c) *PSO and PAM operator requirements during WTG and OSS foundation installation and UXO/MEC detonations*. The following measures apply to PSOs and PAM operators during WTG and OSS foundation installation and UXO/MEC detonations and must be implemented by Ocean Wind:

(1) PSOs and PAM operator(s), using a NMFS-approved PAM system, must monitor for marine mammals 60 minutes prior to, during, and 30 minutes following all pile-driving and UXO/MEC detonation activities. If PSOs cannot visually monitor the minimum visibility zone prior to impact pile driving or the clearance zone prior to any UXO/MEC detonation at all times using the equipment described in paragraphs (b)(6) and (7) of this section, pile-driving operations or UXO/MEC detonation must not commence or must shutdown if they are currently active;

(2) At least three on-duty PSOs must be stationed and observing from the activity platform during impact pile driving or UXO/MEC detonation and at least three on-duty PSOs must be stationed on each dedicated PSO vessel. If an aerial platform is required or used (per section 3(e)(7) of this LOA), at least two on-duty PSOs must be actively searching for marine mammals. Concurrently, at least one PAM operator per acoustic data stream (equivalent to the number of acoustic buoys) must be actively monitoring for marine mammals 60 minutes before, during, and 30 minutes after impact pile driving or UXO/MEC detonation in accordance with a NMFS-approved PAM Plan;

(3) Ocean Wind must conduct PAM for at least 24 hours immediately prior to pile driving or UXO/MEC detonation activities. The PAM operator must review all detections from the previous 24-hour period immediately prior to pile driving and UXO/MEC detonation activities.

(d) *PSO requirements during cofferdam and goal post installation and removal*. The following measures apply to PSOs during cofferdam and goal post installation and removal and must be implemented by Ocean Wind:

(1) At least two PSOs must be on active duty during all activities related to the installation and removal of cofferdams and goal posts; and

(2) PSOs must monitor the clearance zone for the presence of marine mammals for 30 minutes before, throughout the installation of the sheet piles (and casing pipe, if installed), and for 30 minutes after all vibratory pile driving activities have ceased. Sheet pile or casing pipe installation must only commence when visual clearance zones are fully visible (*e.g.*, not obscured by darkness, rain, fog, *etc.*) and clear of marine mammals, as determined by the Lead PSO, for at least 30 minutes immediately prior to initiation of vibratory pile driving.

(e) *PSO requirements during HRG surveys*. The following measures apply to PSOs during HRG surveys using acoustic sources that have the potential to result in harassment and must be implemented by Ocean Wind:

(1) Between four and six PSOs must be present on every 24-hour survey vessel and two to three PSOs must be present on every 12-hour survey vessel;

(2) At least one PSO must be on active duty monitoring during HRG surveys conducted during daylight (*i.e.*, from 30 minutes prior to civil sunrise through 30 minutes following civil sunset) and at least two PSOs must be on activity duty monitoring during HRG surveys conducted at night;

(3) PSOs on HRG vessels must begin monitoring 30 minutes prior to activating acoustic sources, during the use of these acoustic sources, and for 30 minutes after use of these acoustic sources has ceased;

(4) Any observations of marine mammals must be communicated to PSOs on all nearby survey vessels during concurrent HRG surveys; and

(5) During daylight hours when survey equipment is not operating, Ocean Wind must ensure that visual PSOs conduct, as rotation schedules allow, observations for comparison of sighting rates and behavior with and without use of the specified acoustic sources. Off-effort PSO monitoring must be reflected in the monthly PSO monitoring reports.

(f) *Monitoring requirements during fisheries monitoring surveys*. The following measures apply during fisheries monitoring surveys and must be implemented by Ocean Wind:

(1) All captains and crew conducting fishery surveys must be trained in marine mammal detection and identification; and

(2) Marine mammal monitoring must be conducted within 1 nmi from the planned survey location by the trained captain and/or a member of the scientific crew for

15 minutes prior to deploying gear, throughout gear deployment and use, and for 15 minutes after haul back.

(g) *Reporting*. Ocean Wind must comply with the following reporting measures:

(1) Prior to initiation of any on-water project activities, Ocean Wind must demonstrate in a report submitted to NMFS Office of Protected Resources that all required training for Ocean Wind personnel (including the vessel crews, vessel captains, PSOs, and PAM operators) has been completed.

(2) Ocean Wind must use a standardized reporting system during the effective period of the LOA. All data collected related to the Project must be recorded using industry-standard software that is installed on field laptops and/or tablets. Unless stated otherwise, all reports must be submitted to NMFS Office of Protected Resources (*PR.ITP.MonitoringReports@noaa.gov*), dates must be in MM/DD/YYYY format, and location information must be provided in Decimal Degrees and with the coordinate system information (*e.g.*, NAD83, WGS84, *etc*.).

(3) For all visual monitoring efforts and marine mammal sightings, the following information must be collected and reported to NMFS Office of Protected Resources:

(i) The date and time that monitored activity begins or ends;

(ii) The construction activities occurring during each observation period; the watch status (*i.e.*, sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);

(iii) The PSO who sighted the animal;

(iv) The time of sighting; the weather parameters (*e.g.*, wind speed, percent cloud cover, visibility);

(v) The water conditions (*e.g*., Beaufort sea state, tide state, water depth);

(vi) All marine mammal sightings, regardless of distance from the construction activity;

(vii) Species (or lowest possible taxonomic level possible);

(viii) The pace of the animal(s);

(ix) The estimated number of animals (minimum/maximum/high/low/best);

(x) The estimated number of animals by cohort (*e.g.*, adults, yearlings, juveniles, calves, group composition, *etc*.);

(xi) The description (*i.e.*, as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);

(xii) The description of any marine mammal behavioral observations (*e.g.*, observed behaviors such as feeding or traveling) and observed changes in behavior, including an assessment of behavioral responses thought to have resulted from the specific activity;

(xiii) The animal's closest distance and bearing from the pile being driven or specified HRG equipment and estimated time entered or spent within the Level A harassment and/or Level B harassment zone(s);

(xiv) The activity at time of sighting (*e.g.*, vibratory installation/removal, impact pile driving, construction survey), use of any noise attenuation device(s), and specific phase of activity (*e.g.*, ramp-up of HRG equipment, HRG acoustic source on/off, soft-start for pile driving, active pile driving, *etc*.);

(xv) The marine mammal occurrence in Level A harassment or Level B harassment zones;

(xvi) The description of any mitigation-related action implemented, or mitigation-related actions called for but not implemented, in response to the sighting (*e.g.*, delay, shutdown, *etc*.) and time and location of the action;

(xvii) Other human activity in the area; and

(xviii) Other applicable information.

(4) Ocean Wind must compile and submit weekly reports during foundation installation to NMFS Office of Protected Resources that document the daily start and stop of all pile driving associated with the Project; the start and stop of associated observation periods by PSOs; details on the deployment of PSOs; a record of all detections of marine mammals (acoustic and visual); any mitigation actions (or if mitigation actions could not be taken, provide reasons why); and details on the noise attenuation system(s) used and its performance. Weekly reports are due on Wednesday for the previous week (Sunday to Saturday) and must include the information required under this section. The weekly report must also identify which turbines become operational and when (a map must be provided). Once all foundation pile installation is completed, weekly reports are no longer required by Ocean Wind.

(5) Ocean Wind must compile and submit monthly reports to NMFS Office of Protected Resources during foundation installation that include a summary of all information in the weekly reports, including project activities carried out in the previous month, vessel transits (number, type of vessel, MMIS number, and route), number of piles installed, all detections of marine mammals, and any mitigative action taken. Monthly reports are due on the 15th of the month for the previous month. The monthly report must also identify which turbines become operational and when (a map must be provided). Full PAM detection data and metadata must also be submitted monthly on the 15th of every month for the

previous month via the webform on the NMFS North Atlantic Right Whale Passive Acoustic Reporting System website at *https://www.fisheries.noaa.gov/resource/document/passive-acoustic-reporting-system-templates*.

(6) Ocean Wind must submit a draft annual report to NMFS Office of Protected Resources no later than 90 days following the end of a given calendar year. Ocean Wind must provide a final report within 30 days following resolution of NMFS' comments on the draft report. The draft and final reports must detail the following: the total number of marine mammals of each species/stock detected and how many were detected within the designated Level A harassment and Level B harassment zone(s) with comparison to authorized take of marine mammals for the associated activity type; marine mammal detections and behavioral observations before, during, and after each activity; what mitigation measures were implemented (*i.e.*, number of shutdowns or clearance zone delays, *etc*.) or, if no mitigative actions was taken, why not; operational details (*i.e.*, days and duration of impact and vibratory pile driving, days and number of UXO/MEC detonations, days and amount of HRG survey effort, *etc*.); any PAM systems used; the results, effectiveness, and which noise attenuation systems were used during relevant activities (*i.e.*, impact pile driving, and UXO/MEC detonations); summarized information related to situational reporting; and any other important information relevant to the Project, including additional information that may be identified through the adaptive management process.

(7) Ocean Wind must submit its draft 5-year report to NMFS Office of Protected Resources on all visual and acoustic monitoring conducted within 90 calendar days of the completion of activities occurring under the LOA. A 5-year report must be prepared and submitted within 60 calendar days following receipt of any NMFS Office of Protected Resources comments on the draft report. If no comments are received from NMFS Office of Protected Resources within 60 calendar days of NMFS Office of Protected Resources receipt of the draft report, the report shall be considered final. The draft and final 5-year report must include, but it not limited to: the total number (annually and across all five years) of marine mammals of each species/stock detected and how many were detected within the designated Level A harassment and Level B harassment zone(s) with comparison to authorized take of marine mammals for the associated activity type; a summary table(s) indicating the amount of each activity type (*e.g*., pile installation, HRG, UXO) completed in each of the five years and total; GIS shapefile(s) of the final location of all piles, cable routes, and other permanent structures including an indication of what year installed and began operating; GIS shapefile of all North Atlantic right whale sightings, including dates and group sizes; a five-year summary and evaluation of all SFV data collected; a five-year summary and evaluation of all PAM data collected; a five-year summary and evaluation of marine mammal behavioral observations; a five-year summary and evaluation of mitigation and monitoring implementation and effectiveness; and a list of recommendations to inform environmental compliance assessments for future offshore wind actions.

(8) For those foundation piles and UXO/MEC detonations requiring SFV measurements, Ocean Wind must provide the initial results of the SFV measurements to NMFS Office of Protected Resources in an interim report after each foundation installation event and each UXO/MEC detonation event as soon as they are available and prior to a subsequent detonation or foundation installation, but no later than 48 hours after each completed foundation installation event and 48 hours after a detonation. The report must include, at minimum: hammer energies/schedule used during pile driving, including, the total number of strikes and the maximum hammer energy; the model-estimated acoustic ranges ($R_{95\%}$) to compare with the real-world sound field measurements; the estimated UXO/MEC charge size (or physical size if charge size is unknown) and donor charge size in trinitrotoluene (TNT) equivalent weight for either high (donor charge used to detonate/destroy UXO/MEC) or low order (*e.g.*, deflagration where donor charge disrupts/consumes UXO/MEC) detonations and description of UXO/MEC (*e.g.*, munition type, state of submergence, approximate age); peak sound pressure level (SPL_{pk}), root-mean-square sound pressure level that contains 90 percent of the acoustic energy (SPL_{rms}), and sound exposure level (SEL, in single strike for pile driving, $SEL_{ss,}$), for each hydrophone, including at least the maximum, arithmetic mean, minimum, median (L50) and L5 (95 percent exceedance) statistics for each metric; estimated marine mammal Level A harassment and Level B harassment acoustic isopleths, calculated using the maximum-over-depth L5 (95 percent exceedance level, maximum of both hydrophones) of the associated sound metric; comparison of modeled results assuming 10-dB attenuation against the measured marine mammal Level A harassment and Level B harassment acoustic isopleths; estimated transmission loss coefficients; pile identifier name, location of the pile and UXO/MEC and each hydrophone array in latitude/longitude; depths of each hydrophone; one-third-octave band single strike SEL spectra; if filtering is applied, full filter characteristics must be reported; and hydrophone specifications including the type, model, and sensitivity. Ocean Wind must also report any immediate observations which are suspected to have a significant impact on the results including but not limited to: observed noise mitigation system issues, obstructions along the measurement transect, and technical issues with hydrophones or recording devices. If any *in-situ* calibration checks for hydrophones reveal a calibration drift greater than 0.75 dB, pistonphone calibration checks are inconclusive, or calibration checks are otherwise not effectively performed, Ocean Wind must indicate full details of the calibration procedure, results, and any associated issues in the 48-hour interim reports.

(9) The final results of SFV measurements from each foundation installation and each UXO/MEC detonation must be submitted as soon as possible, but no later than 90 days following completion of each event's SFV measurements. The final reports must include all details prescribed above for the interim report as well as, at minimum, the following: the peak sound pressure level (SPL_{pk}), the root-mean-square sound pressure level that contains 90 percent of the acoustic energy (SPL_{rms}), the single strike sound exposure level (SEL_{ss}), the integration time for SPL_{rms}, the spectrum, and the 24-hour cumulative SEL extrapolated from

measurements at all hydrophones. The final report must also include at least the maximum, mean, minimum, median (L_{50}) and L_5 (95 percent exceedance) statistics for each metric; the SEL and SPL power spectral density and/or one-third octave band levels (usually calculated as decidecade band levels) at the receiver locations should be reported; the sound levels reported must be in median, arithmetic mean, and L_5 (95 percent exceedance) (*i.e.*, average in linear space), and in dB; range of TL coefficients; the local environmental conditions, such as wind speed, transmission loss data collected on-site (or the sound velocity profile); baseline pre- and post-activity ambient sound levels (broadband and/or within frequencies of concern); a description of depth and sediment type, as documented in the Construction and Operation Plan (COP), at the recording and foundation installation and UXO/MEC detonation locations; the extents of the measured Level A harassment and Level B harassment zone(s); hammer energies required for pile installation and the number of strikes per pile; the charge weights and other relevant characteristics of UXO/MEC detonations; the hydrophone equipment and methods (*i.e.*, recording device, bandwidth/sampling rate; distance from the pile and UXO/MEC where recordings were made; the depth of recording device(s)); a description of the SFV measurement hardware and software, including software version used, calibration data, bandwidth capability and sensitivity of hydrophone(s), any filters used in hardware or software, any limitations with the equipment, and other relevant information; the spatial configuration of the noise attenuation device(s) relative to the pile and UXO/MEC charge; a description of the noise abatement system and operational parameters (*e.g.*, bubble flow rate, distance deployed from the pile and/or UXO/MEC, *etc.*), and any action taken to adjust the noise abatement system. A discussion which includes any observations which are suspected to have a significant impact on the results including but not limited to: observed noise mitigation system issues, obstructions along the measurement transect, and technical issues with hydrophones or recording devices.

(10) If at any time during the project Ocean Wind becomes aware of any issue or issues which may (to any reasonable subject-matter expert, including the persons performing the measurements and analysis) call into question the validity of any measured Level A harassment or Level B harassment isopleths to a significant degree, which were previously transmitted or communicated to NMFS Office of Protected Resources, Ocean Wind must inform NMFS Office of Protected Resources within 1 business day of becoming aware of this issue or before the next pile is driven (or UXO/MEC is detonated), whichever comes first.

(11) If a North Atlantic right whale is acoustic detected at any time by a project-related PAM system, Ocean Wind must ensure the detection is reported as soon as possible to NMFS, but no longer than 24 hours after the detection via the *24-hour North Atlantic right whale Detection Template* (*https://www.fisheries.noaa.gov/resource/document/passive-acoustic-reporting-system-templates*). Calling the hotline is not necessary when reporting PAM detections via the template;

(12) Full detection data, metadata, and location of recorders (or GPS tracks, if applicable) from all real-time hydrophones used for monitoring during construction must be submitted within 90 calendar days following completion of activities requiring PAM for mitigation via the ISO standard metadata forms available on the NMFS Passive Acoustic Reporting System website *(https://www.fisheries.noaa.gov/resource/document/passive-acoustic-reporting-system-templates*). Submit the completed data templates to *nmfs.nec.pacmdata@noaa.gov*. The full acoustic recordings from real-time systems must also be sent to the National Centers for Environmental Information (NCEI) for archiving within 90 days following completion of activities requiring PAM for mitigation. Submission details can be found at: *https://www.ncei.noaa.gov/products/passive-acoustic-data*;

(13) Ocean Wind must submit situational reports if the following circumstances occur (including all instances wherein an exemption is taken must be reported to NMFS Office of Protected Resources within 24 hours):

(i) If a North Atlantic right whale is observed at any time by PSOs or project personnel, Ocean Wind must ensure the sighting is immediately (if not feasible, as soon as possible and no longer than 24 hours after the sighting) reported to NMFS and the Right Whale Sightings Advisory System (RWSAS). If in the Northeast Region (Maine to Virginia/North Carolina border) call (866-755-6622). If in the Southeast Region (North Carolina to Florida) call (877-WHALE-HELP or 877-942-5343). If calling NMFS is not possible, reports can also be made to the U.S. Coast Guard via channel 16 or through the WhaleAlert app (*http://www.whalealert.org/*). The sighting report must include the time, date, and location of the sighting, number of whales, animal description/certainty of sighting (provide photos/video if taken), Lease Area/project name, PSO/personnel name, PSO provider company (if applicable), and reporter's contact information.

(ii) If a North Atlantic right whale is observed at any time by PSOs or project personnel, Ocean Wind must submit a summary report to NMFS Greater Atlantic Regional Fisheries (GARFO; *nmfs.gar.incidental-take@noaa.gov*), NMFS Office of Protected Resources, and NMFS Northeast Fisheries Science Center (NEFSC; *ne.rw.survey@noaa.gov*) within 24 hours with the above information and the vessel/platform from which the sighting was made, activity the vessel/platform was engaged in at time of sighting, project construction and/or survey activity at the time of the sighting (*e.g*., pile driving, cable installation, HRG survey), distance from vessel/platform to sighting at time of detection, and any mitigation actions taken in response to the sighting.

(iii) If an observation of a large whale occurs during vessel transit, Ocean Wind must report the time, date, and location of the sighting; the vessel's activity, heading, and speed (knots); Beaufort sea state, water depth (meters), and visibility conditions; marine mammal species identification to the best of the observer's ability and any distinguishing characteristics;

initial distance and bearing to marine mammal from vessel and closest point of approach; and any avoidance measures taken in response to the marine mammal sighting.

(iv) Ocean Wind must provide NMFS Office of Protected Resources with notification of planned UXO/MEC detonation as soon as possible but at least 48 hours prior to the planned detonation, unless this 48-hour notification would create delays to the detonation that would result in imminent risk of human life or safety. This notification must include the coordinates of the planned detonation, the estimated charge size, and any other information available on the characteristics of the UXO/MEC. If an UXO/MEC detonation occurs, within 72 hours after a detonation but before the next detonation, whichever is sooner, Ocean Wind must report to NMFS Office of Protected Resources the time, date, location (latitude/longitude Decimal Degrees), charge weight size, justification on why detonation was necessary and other means of removal or avoidance could not occur, all detections of marine mammals within the UXO/MEC zones, and any mitigative action taken.

(v) In the event that personnel involved in the Project discover a stranded, entangled, injured, or dead marine mammal, Ocean Wind must immediately report the observation to NMFS. If in the Greater Atlantic Region (Maine to Virginia) call the NMFS Greater Atlantic Stranding Hotline (866-755-6622); if in the Southeast Region (North Carolina to Florida), call the NMFS Southeast Stranding Hotline (877-942-5343). Separately, Ocean Wind must report the incident to NMFS Office of Protected Resources (*PR.ITP.MonitoringReports@noaa.gov)* and, if in the Greater Atlantic region (Maine to Virginia), NMFS Greater Atlantic Regional Fisheries Office (GARFO; *nmfs.gar.incidental-take@noaa.gov*, *nmfs.gar.stranding@noaa.gov*) or, if in the Southeast region (North Carolina to Florida), NMFS Southeast Regional Office (SERO; *secmammalreports@noaa.gov*) as soon as feasible. The report (via phone or email) must include contact (name, phone number, *etc.*), the time, date, and location of the first discovery (and updated location information if known and applicable); Species identification (if known) or description of the animal(s) involved; condition of the animal(s) (including carcass condition if the animal is dead); observed behaviors of the animal(s), if alive; if available, photographs or video footage of the animal(s); and general circumstances under which the animal was discovered.

(vi) In the event of a vessel strike of a marine mammal by any vessel associated with the Project or if project activities cause a non-auditory injury or death of a marine mammal, Ocean Wind must immediately report the incident to NMFS. If in the Greater Atlantic Region (Maine to Virginia) call the NMFS Greater Atlantic Stranding Hotline (866-755-6622) and if in the Southeast Region (North Carolina to Florida) call the NMFS Southeast Stranding Hotline (877-942-5343). Separately, Ocean

Wind must immediately report the incident to NMFS Office of Protected Resources (*PR.ITP.MonitoringReports@noaa.gov)* and, if in the Greater Atlantic region (Maine to Virginia), NMFS GARFO (*nmfs.gar.incidental-take@noaa.gov, nmfs.gar.stranding@noaa.gov*) or, if in the Southeast region (North Carolina to Florida), NMFS SERO (*secmammalreports@noaa.gov*). The report must include the time, date, and location of the incident; species identification (if known) or description of the animal(s) involved; vessel size and motor configuration (inboard, outboard, jet propulsion); vessel's speed leading up to and during the incident; vessel's course/heading and what operations were being conducted (if applicable); status of all sound sources in use; description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike; environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike; estimated size and length of animal that was struck; description of the behavior of the marine mammal immediately preceding and following the strike; if available, description of the presence and behavior of any other marine mammals immediately preceding the strike; estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and to the extent practicable, photographs or video footage of the animal(s). Ocean Wind must immediately cease all on-water activities until the NMFS Office of Protected Resources is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the LOA. NMFS Office of Protected Resources may impose additional measures to minimize the likelihood of further prohibited take and ensure MMPA compliance. Ocean Wind may not resume their activities until notified by NMFS Office of Protected Resources.

(14) Ocean Wind must report any lost gear associated with the fishery surveys to the NMFS GARFO Protected Resources Division (*nmfs.gar.incidental-take@noaa.gov*) as soon as possible or within 24 hours of the documented time of missing or lost gear. This report must include information on any markings on the gear and any efforts undertaken or planned to recover the gear.

5. Modifications to Letter of Authorization:

(a) This LOA may be modified, upon request by Ocean Wind, provided that:

(1) NMFS Office of Protected Resources determines that the specified activities, mitigation, monitoring, and reporting measures, as well as the anticipated impacts, required by the previous LOA under this subpart were implemented successfully. This excludes changes made pursuant to the adaptive management provision found in Section 5(c).

(b) Any LOA modification request by Ocean Wind that includes changes to the activity or the mitigation, monitoring, or reporting measures (excluding changes made pursuant to the adaptive management provision found in Section 5(c)), may be approved, provided that:

(1) NMFS Office of Protected Resources determines that the changes to the activity or the mitigation, monitoring, or reporting do not change the findings made for the regulations in this subpart and do not result in an increase in the maximum annual or five-year total estimated number of takes for any species; and

(2) NMFS Office of Protected Resources may, if appropriate, publish a notice of proposed LOA in the *Federal Register*, including the associated analysis of the change, and solicit public comment before issuing the LOA.

(c) *Adaptive Management*: After consulting with Ocean Wind regarding the practicability of the modifications, NMFS Office of Protected Resources may modify (including delete, modify, or add to) the existing mitigation, monitoring, or reporting measures (after consulting with Ocean Wind regarding the practicability of the modifications), if doing so creates a reasonable likelihood of more effectively accomplishing the goals of the mitigation and monitoring. These could include:

(1) Possible sources of data that could contribute to the decision to modify the mitigation, monitoring, or reporting measures in an LOA include, but are not limited to:

(i) Results from Ocean Wind's monitoring(s);

(ii) Results from other marine mammals and/or sound research or studies; and/or

(iii) Any information that reveals marine mammals may have been taken in a manner, extent, or number not authorized by the regulations in this subpart or subsequent LOA.

(2) If the modifications to the mitigation, monitoring, or reporting measures are substantial, NMFS Office of Protected Resources shall publish a notice of proposed LOA in the Federal Register and solicit public comment.

(3) If the NMFS Office of Protected Resources determines that an emergency exists that poses a significant risk to the well-being of species or stocks of marine mammals, this LOA may be modified without prior notice or opportunity for public comment. Notice would be published in the *Federal Register* within 30 days of the action.

Should you have questions regarding this LOA or the required conditions found herein, please contact NMFS Office of Protected Resources staff, Jaclyn Daly (*jaclyn.daly@noaa.gov*) and Kelsey Potlock (*kelsey.potlock@noaa.gov*).

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Date: 2023.10.13 13:02:50 -04'00'

Kimberly Damon-Randall,
Director, Office of Protected Resources,
National Marine Fisheries Service.

10/13/2023

Date

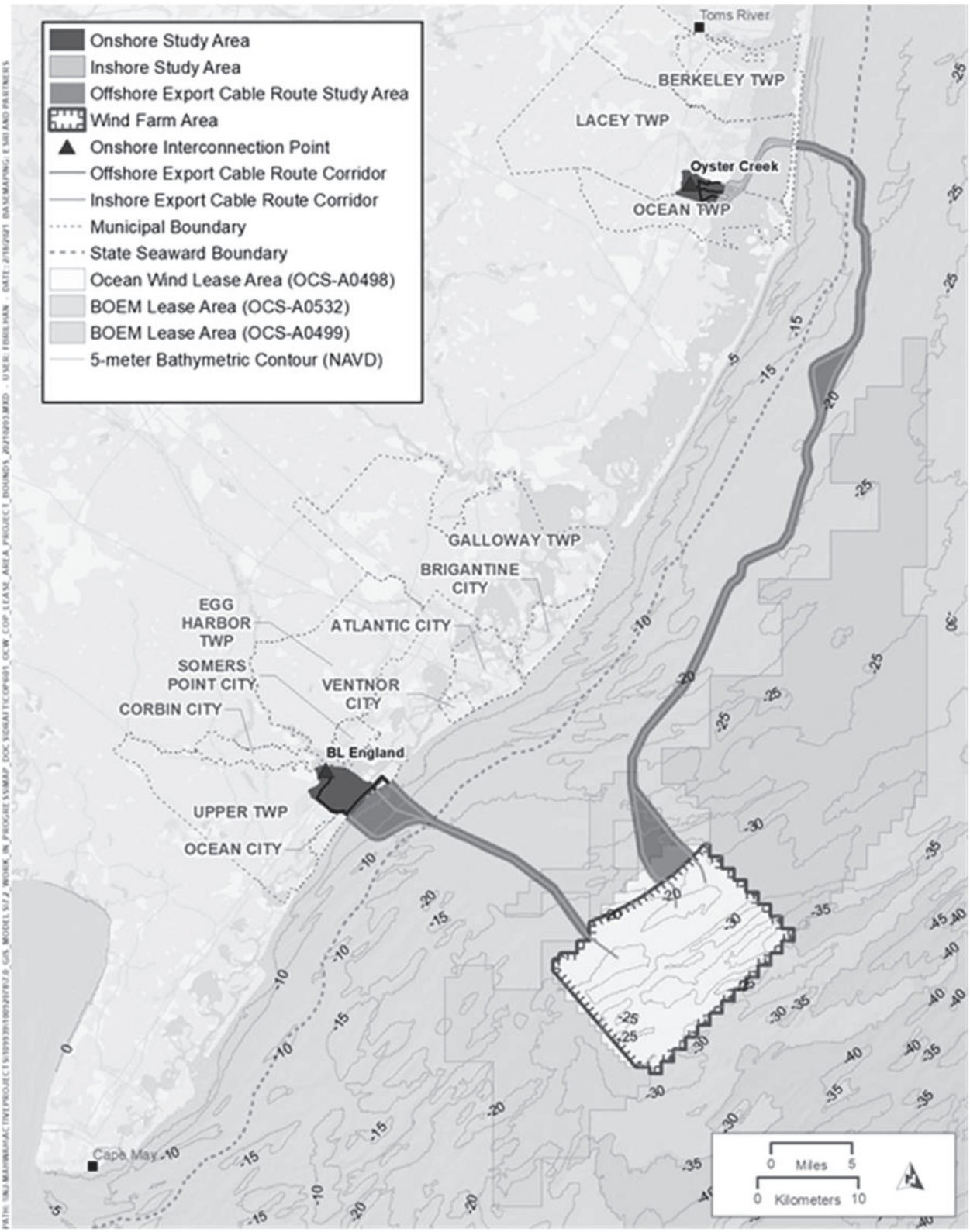

Figure 1 — Project Location

Table 1 – Annual and 5-year Total Take Authorized For Ocean Wind 1 Incidental to All Specified Activities

Species	Scientific Name	Stock	Maximum Annual Take		5-year Total Take	
			Level A harassment	Level B harassment	Level A harassment	Level B harassment
Order Artiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenidae						
North Atlantic right whale*	*Eubalaena glacialis*	Western Atlantic	0	7	0	14
Family Balaenopteridae (rorquals)						
Blue whale*	*Balaenoptera musculus*	Western North Atlantic	0	4	0	4
Fin whale*	*Balaenoptera physalus*	Western North Atlantic	4	13	4	26
Humpback whale	*Megaptera novaeangliae*	Gulf of Maine	8	66	7	81
Minke whale	*Balaenoptera acutorostrata*	Canadian Eastern Coastal	22	74	24	117
Sei whale*	*Balaenoptera borealis*	Nova Scotia	1	3	1	6
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Physeteridae						
Sperm whale*	*Physeter macrocephalus*	North Atlantic	0	9	0	24
Family Delphinidae						
Atlantic spotted dolphin	*Stenella frontalis*	Western North Atlantic	0	135	0	405
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	Western North Atlantic	0	100	0	140
Bottlenose dolphin	*Tursiops truncatus*	Western North	11	1,360	11	2,618

		Atlantic - Offshore				
		Northern Migratory Coastal	22	1,394	22	4,286
Common dolphin	*Delphinus delphis*	Western North Atlantic	0	1,584	0	1,766
Long-finned pilot whale	*Globicephala melas*	Western North Atlantic	0	30	0	90
Short-finned pilot whale	*Globicephala macrorhynchus*	Western North Atlantic	0	30	0	90
Risso's dolphin	*Grampus griseus*	Western North Atlantic	0	90	0	270
Family Phocoenidae (porpoises)						
Harbor porpoise	*Phocoena phocoena*	Gulf of Maine/Bay of Fundy	69	350	79	529
Order Carnivora – Superfamily Pinnipedia						
Family Phocidae (earless seals)						
Gray seal	*Halichoerus grypus*	Western North Atlantic	31	305	35	614
Harbor seal	*Phoca vitulina*	Western North Atlantic	35	844	48	1,701

** Endangered Species Act-listed species*

Table 2 – Minimum Visibility, Clearance, Shutdown, PAM, Level A Harassment, and Level B Harassment Zones During WTG and OSS Foundation Impact Pile Driving in Summer (and Winter)[a]

WTG and OSS Foundation Impact Pile Driving Zone Sizes (meters)					
Designated Zones	North Atlantic Right Whales	Large whales	Delphinids	Harbor Porpoises	Seals
Minimum Visibility Zone	1,650 meters (2,500 meters)				
Clearance Zone[b]	Any distance	2,000 meters (3,000 meters)	100 meters	1,100 meters (1,750 meters)	100 meters
Shutdown Zone[d]	Any distance	1,800 meters (2,500 meters)	100 meters	1,000 meters (1,450 meters)	100 meters
PAM Monitoring Zone	10,000 meters				
Level A Harassment (Exposure Range, $ER_{95\%}$)	Monopiles: 1,650 meters (2,490 meters) Pin Piles: 590 meters (840 meters)				
Level B Harassment (Acoustic Range, $R_{95\%}$)	Monopiles: 3,253 meters (3,534 meters) Pin Piles: 2,155 meters (2,522 meters)				

a – Winter (i.e., December) distances are presented in parentheses.

b – This zone applies to both visual and PAM detections. For North Atlantic right whales, the PAM shutdown zone is limited to the PAM Monitoring Zone (10 km).

Table 3 – Distances to Harassment Thresholds and Mitigation Zones During Vibratory Driving of Sheet Piles and/or Casing Pipe Piles For Cofferdams and Goal Posts

Nearshore Cable Landfall (Cofferdams and Goal Posts) Vibratory Pile Driving Zones (meters)				
Marine Mammal Hearing Groups	Level A harassment (SEL_{cum}) (meters)	Level B harassment (meters)	Clearance Zone (meters)	Shutdown Zone (meters)
Low-frequency cetaceans	86.7	10,000	150	100
Mid-frequency cetaceans	7.7	10,000	150	100
High-frequency cetaceans	128.2	10,000	150	150
Phocid pinnipeds	52.7	10,000	150	60

Note: SEL_{cum} = cumulative sound exposure level.

Table 4 – Clearance, Level A Harassment, and Level B Harassment Zones During UXO/MEC Detonations, by Charge Weight and Assuming 10 dB of Sound Attenuation

UXO/MEC Zones (meters)					
UXO/MEC Charge Weights		Low-frequency cetaceans	Mid-frequency cetaceans	High-frequency cetaceans	Phocid pinnipeds
E4 (2.3 kilograms)	Level A harassment (meters)	552	50	1,820	182
	Level B harassment (meters)	282	453	6,160	1,470
	Clearance Zone (meters)	2,500	500	2,500	1,000
E6 (9.1 kilograms)	Level A harassment (meters)	982	75	2,590	357
	Level B harassment (meters)	4,680	773	8,000	2,350
	Clearance Zone (meters)	4,000	600	4,000	1,500
E8 (45.5 kilograms)	Level A harassment (meters)	1,730	156	3,900	690
	Level B harassment (meters)	7,490	1,240	10,300	3,820
	Clearance Zone (meters)	6,000	1,000	6,000	3,000
E10 (227 kilograms)	Level A harassment (meters)	2,970	337	5,400	1,220
	Level B harassment (meters)	10,500	2,120	12,900	5,980
	Clearance Zone (meters)	9,000	1,500	9,000	4,000
E12 (454 kilograms)	Level A harassment (m)	3,780	461	6,200	1,600

	Level B harassment (meters)	11,900	2,550	14,100	7,020
	Clearance Zone (meters)	10,000	2,000	10,000	5,000

Table 5 – Level B Harassment and Clearance And Shutdown Zones During HRG Surveys

HRG Survey Zones (meters)				
Marine Mammal Species	Level B harassment Zone (meters)		Clearance Zone (meters)	Shutdown Zone (meters)
	Boomer/Sparker	CHIRPs		
Low-frequency cetacean (North Atlantic right whale)	141	48	500	500
Other low-frequency cetaceans (non-North Atlantic right whale species)			100	100
Mid-frequency cetaceans	141	48	100	100 (with an exception noted for bow-riding delphinids of the following genera: *Delphinus*, *Stenella*, *Lagenorhynchus*, and *Tursiops*)
High-frequency cetaceans	141	48	100	100[b]
Phocid Pinnipeds	141	48	100	100

Table 6 – Vessel Separation Distances

Vessel Separation Distances (meters)	
North Atlantic right whale	500 m
Sperm whales and other non-North Atlantic right whale baleen whales	100 m
Delphinids and pinnipeds	50 m