

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 217

[Docket No. 240917–0242]

RIN 0648–BM32

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the Maryland Offshore Wind Project, Offshore of Maryland

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA), as amended, notification is hereby given that NMFS promulgates regulations to govern the incidental taking of marine mammals incidental to US Wind, Inc. (US Wind) during the construction of an offshore wind energy project (the Project) in Federal and State waters off of Maryland, specifically within the Bureau of Ocean Energy Management (BOEM) Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS) Lease Area (OCS–A–0490) (referred to as the Lease Area) and along associated export cable routes to sea-to-shore transition points (collectively, the project area), over the course of 5 years (January 1, 2025 through December 31, 2029). These regulations, which allow for the issuance of a Letter of Authorization (LOA) for the incidental take of marine mammals during specific construction related activities within the project area during the effective dates of the regulations, prescribe the permissible methods of taking and other means of effecting the least practicable adverse impact on marine mammal species or stocks and their habitat, as well as requirements pertaining to the monitoring and reporting of such taking.

DATES: This rule is effective from January 1, 2025, through December 31, 2029.

FOR FURTHER INFORMATION CONTACT: Jessica Taylor, Office of Protected Resources, NMFS, (301) 427–8401.

SUPPLEMENTARY INFORMATION:**Availability**

A copy of US Wind’s application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable>. In case of problems accessing these documents, please call the contact listed above (see **FOR FURTHER INFORMATION CONTACT**).

Purpose and Need for Regulatory Action

This final rule, as promulgated, provides a framework under the authority of the MMPA (16 U.S.C. 1361 *et seq.*) to authorize the take of marine mammals incidental to construction of the Project within the project area. NMFS received a request from US Wind to incidentally take a small number of marine mammals from 19 species of marine mammals, comprising 20 stocks (5 stocks by Level A harassment and Level B harassment; 15 stocks by Level B harassment only), incidental to US Wind’s construction activities. US Wind did not request and NMFS neither anticipates nor allows take by serious injury or mortality incidental to the specified activities in this final rulemaking.

Purpose and Need for Regulatory Action

Legal Authority for the Final Action

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made, regulations are promulgated (when applicable), and public notice and an opportunity for public comment are provided.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth.

Legal Authority for the Final Action

As noted above, US Wind did not request and NMFS neither anticipates nor allows take by serious injury or mortality incidental to the specified activities in this final rulemaking. Relevant definitions of MMPA statutory and regulatory terms are included below:

- *U.S. Citizens*—individual U.S. citizens or any corporation or similar entity if it is organized under the laws of the United States or any governmental unit defined in 16 U.S.C. 1362(13) (50 CFR 216.103);
- *Take*—to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal (16 U.S.C. 1362; 50 CFR 216.3);
- *Incidental Harassment, Incidental Taking and Incidental, but not Intentional, Taking*—an accidental taking. This does not mean that the taking is unexpected, but rather it includes those takings that are infrequent, unavoidable or accidental (see 50 CFR 216.103);
- *Serious Injury*—any injury that will likely result in mortality (50 CFR 216.3);
- *Level A harassment*—any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild (16 U.S.C. 1362; 50 CFR 216.3); and
- *Level B harassment*—any act of pursuit, torment, or annoyance which has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (16 U.S.C. 1362; 50 CFR 216.3).

Section 101(a)(5)(A) of the MMPA and the implementing regulations at 50 CFR part 216, subpart I provide the legal basis for proposing and, if appropriate, issuing this rule containing 5-year regulations and associated LOA. This final rule also establishes required mitigation, monitoring, and reporting requirements for US Wind’s construction activities.

Summary of Major Provisions Within the Final Rule

The major provisions within this final rule include:

- Allowing NMFS to authorize, under a LOA, the take of small numbers of marine mammals by Level A harassment and/or Level B harassment (50 CFR 217.312) incidental to the Project and prohibiting take of such species or stocks in any manner not permitted (50 CFR 217.313) (e.g., mortality or serious injury);
- Establishing a seasonal moratorium on foundation impact pile driving

As noted above, US Wind did not request and NMFS neither anticipates nor allows take by serious injury or mortality incidental to the specified activities in this final rulemaking. Relevant definitions of MMPA statutory and regulatory terms are included below:

- *U.S. Citizens*—individual U.S. citizens or any corporation or similar entity if it is organized under the laws of the United States or any governmental unit defined in 16 U.S.C. 1362(13) (50 CFR 216.103);
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- *Level B harassment*—any act of pursuit, torment, or annoyance which has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (16 U.S.C. 1362; 50 CFR 216.3).

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- Establishing a seasonal moratorium on foundation impact pile driving

during December 1–April 30, annually, as well as avoiding foundation impact pile driving in November to the maximum extent practicable to minimize impacts to North Atlantic right whales (*Eubalaena glacialis*);

- Conducting both visual and passive acoustic monitoring (PAM) by trained, NMFS-approved Protected Species Observers (PSO) and PAM operators before, during, and after select in-water construction activities;

- Requiring training for all Project personnel to ensure marine mammal protocols and procedures are clearly understood;

- Establishing clearance and shutdown zones for all in-water construction activities and high-resolution geophysical (HRG) marine site characterization surveys to prevent or reduce the risk of Level A harassment and to minimize the risk of Level B harassment, including a delay or shutdown of foundation impact pile driving if a North Atlantic right whale is observed at any distance by PSOs or acoustically detected within certain distances;

- Establishing minimum visibility and PAM monitoring zones during foundation impact pile driving;

- Requiring use of at least two sound attenuation devices during all foundation impact pile driving installation activities to reduce noise levels to those modeled assuming a broadband 10 decibel (dB) attenuation;

- Requiring sound field verification (SFV) monitoring during impact pile driving of foundation piles to measure *in situ* noise levels for comparison against the modeled results and ensure noise levels assuming 10 dB attenuation are not exceeded;

- Requiring SFV during the operational phase of the Project;

- Implementing soft-starts during impact pile driving and ramp-up during the use of HRG marine site characterization survey equipment;

- Requiring various vessel strike avoidance measures;

- Requiring various measures during fisheries monitoring surveys, such as removing gear from the water if marine mammals are considered at-risk or are interacting with gear;

- Requiring regular and situational reporting including, but not limited to, information regarding activities occurring, marine mammal observations and acoustic detections, and SFV monitoring results; and

- Requiring monitoring of the North Atlantic right whale sighting networks, Channel 16, and PAM data, as well as reporting any sightings to the NMFS.

Through adaptive management (*see* 50 CFR 217.347(c)(1)) NMFS Office of Protected Resources may modify (*e.g.*, remove, revise, or add to) the existing mitigation, monitoring, or reporting measures summarized above and required by the LOA.

NMFS must withdraw or suspend an LOA issued under these regulations, after notice and opportunity for public comment, if it finds the methods of taking or the mitigation, monitoring, or reporting measures are not being substantially complied with (16 U.S.C. 1371(a)(5)(B); 50 CFR 216.106(e)). Additionally, failure to comply with the requirements of the LOA may result in civil monetary penalties and knowing violations may result in criminal penalties (16 U.S.C. 1375; 50 CFR 216.106(g)).

Fixing America's Surface Transportation Act (FAST–41)

This Project is covered under title 41 of the Fixing America's Surface Transportation Act, or "FAST–41." A "covered project" under FAST–41 is defined generally as "any activity in the United States that requires authorization or environmental review by a Federal agency involving construction of infrastructure for renewable or conventional energy production" 42 U.S.C. 4370m–(6)(A). The Project, which involves construction of renewable wind energy infrastructure off of Maryland, will provide 300 megawatts (MW) of energy and, upon completion, advance the State of Maryland's renewable energy goals. As such, the Project falls under FAST–41's definition of "covered project."

FAST–41 includes a suite of provisions designed to expedite the environmental review for covered infrastructure projects, including enhanced interagency coordination as well as milestone tracking on the public-facing Permitting Dashboard. FAST–41 also places a 2-year limitations period on any judicial claim that challenges the validity of a Federal agency decision to issue or deny an authorization for a FAST–41 covered project 42 U.S.C. 4370m–6(a)(1)(A).

The Project is listed on the Permitting Dashboard, where milestones and schedules related to the environmental review and permitting for the Project can be found at <https://www.permits.performance.gov/permitting-project/fast-41-covered-projects/maryland-offshore-wind-project>.

Summary of Request

On August 31, 2022, US Wind submitted a request for the promulgation of regulations and

issuance of an associated 5-year LOA to take marine mammals incidental to construction activities associated with implementation of the Project offshore of Maryland in the BOEM Lease Area OCS–A 0490 and associated export cable routes. US Wind's request is for the incidental, but not intentional, taking of a small number of 19 marine mammal species (comprising 20 stocks) by Level B harassment (for all 20 stocks) and by Level A harassment (for 5 of the 20 stocks). US Wind did not request, and NMFS does not anticipate, take by serious injury or mortality to occur for any marine mammal species or stock incidental to the specified activities.

In response to our questions and comments and following extensive information exchanges between US Wind and NMFS, US Wind submitted a final, revised application on March 31, 2023 that NMFS deemed adequate and complete on April 3, 2023. This application is available on NMFS' website at: <https://www.fisheries.noaa.gov/action/incidental-take-authorization-us-wind-inc-construction-and-operation-maryland-offshore-wind>.

On May 2, 2023, NMFS published a notice of receipt (NOR) of US Wind's adequate and complete application in the **Federal Register** (88 FR 27463), requesting comments and soliciting information related to US Wind's request during a 30-day public comment period. During the NOR public comment period, NMFS received comment letters from 77 private citizens, 6 non-governmental organizations, and 1 State government organization (Delaware Department of Natural Resources and Environmental Control). NMFS reviewed all submitted material and took these into consideration during the drafting of the proposed rule.

On September 6, 2023 and September 11, 2023, US Wind submitted supplemental information related to its pilot whale and seal take analyses. The corresponding memos, entitled "US Wind NMFS Request for Information (RFI) Response Memo and Maryland Offshore Wind Project Revised Requested Take Tables" are available on our website at <https://www.fisheries.noaa.gov/action/incidental-take-authorization-us-wind-inc-construction-and-operation-maryland-offshore-wind>.

On January 4, 2024, NMFS published the proposed rule for the Project in the **Federal Register** (89 FR 504). In the proposed rule, NMFS synthesized all of the information provided by US Wind, all best available scientific information and literature relevant to the Project, outlined, in detail, proposed mitigation designed to effect the least practicable

adverse impacts on marine mammal species and stocks as well as proposed monitoring and reporting measures, and made preliminary negligible impact and small numbers determinations. The public comment period on the proposed rule was open for 30 days from January 4, 2024 through February 5, 2024 on <https://Regulations.gov>. A summary of public comments received during this 30-day period are described in the Comments and Responses section; full public comments may be viewed on <https://Regulations.gov>.

On August 1, 2022, NMFS announced proposed changes to the existing North Atlantic right whale vessel speed regulations (87 FR 46921) to further reduce the likelihood of mortalities and serious injuries to endangered right whales from vessel collisions, which are a leading cause of the species' decline and a primary factor in an ongoing Unusual Mortality Event (UME). Should a final vessel speed rule be issued and become effective during the effective period of this incidental take authorization (or any other MMPA incidental take authorization), the authorization holder would be required to comply with any and all applicable requirements contained within the final rule. Specifically, where measures in any final vessel speed rule are more protective or restrictive than those in this or any other MMPA authorization,

authorization holders would be required to comply with the requirements of the rule. Alternatively, where measures in this or any other MMPA authorization are more restrictive or protective than those in any final vessel speed rule, the measures in the MMPA authorization would remain in place. The responsibility to comply with the applicable requirements of any vessel speed rule would become effective immediately upon the effective date of any final vessel speed rule and when notice is published on the effective date, NMFS would also notify US Wind if the measures in the speed rule were to supersede any of the measures in the MMPA authorization such that they were no longer required.

Description of Specified Activity

Overview

US Wind plans to construct and operate a wind energy facility, the Project, in the Atlantic Ocean in lease area OCS-A 0490, offshore Maryland. The Project consists of 3 construction campaigns including MarWin, located in the southeastern portion of the Lease Area with the potential to generate approximately 300 megawatts (MW) of energy, Momentum Wind, located immediately west of MarWin with the potential to generate approximately 808 MW of energy, and Future Development, which encompasses

buildout of the remainder of the Lease Area and for which generation capacity has yet to be determined (table 1). Once operational, MarWin and Momentum Wind would advance the State of Maryland's renewable energy goals, providing 50 percent of the State's goal by the year 2030, with the full buildout of the Lease Area further achieving renewable energy targets. US Wind also anticipates completing the Future Development campaign within the effective period of the rule.

The Project will consist of several different types of permanent offshore infrastructure, including up to 114 WTGs (e.g., 18-MW model with a 250-meter (m) rotor diameter platform), four OSSs, a MET tower, and inter-array and export cables. MarWin will occupy approximately 46.6 square kilometers (km²) (11,515 acres), which will include approximately 21 WTGs and 1 OSS. The MarWin campaign, as well as subsequent Momentum Wind and Future Development, includes monopiles as the only potential WTG foundation type. For each campaign, the OSS would be supported by monopiles or jacket foundations with skirt piles. Skirt piles are post-piled pin piles. Jacket foundations are placed on the seabed and pin piles are driven into jacket pile guides, which are known as skirts. Table 1 provides a summary of each construction campaign.

TABLE 1—US WIND'S ANTICIPATED CONSTRUCTION CAMPAIGN SCHEDULE

Campaigns	Construction year	Number of 11-m monopiles for WTGs	Number 3-m pin piles for OSS jacket foundations ¹	Number of 1.8-m pin piles for Met tower	Onshore export cables	Offshore substations
MarWin	1 (2025)	21	4 (1 jacket)	0	4	1
Momentum	2 (2026)	55	8 (2 jackets)	3	0	2
Future Development	3 (2027)	38	4 (1 jacket)	0	0	1

¹ Potential OSS foundations could also include monopile and suction bucket jacket foundations.

Strings of WTGs will connect with the OSS via a submarine inter-array cable transmission system. Up to four high-voltage alternating current (HVAC) offshore export cables will be installed during the MarWin campaign, spanning approximately 65–97 (kilometers) km (40–60 miles (mi)) in length, dependent on the location of the OSS and the final routing. The Export Cable Corridor (ECC) will transmit electricity from the OSS to one or two landfall sites in Delaware Seashore State Park.

The second construction campaign, Momentum Wind, will contain approximately 55 WTGs, 2 OSSs, and 1 MET tower within an area of approximately 142.4 km² (35,188 acres). The Met tower will be supported by pin pile foundations. During the third

construction campaign, Future Development, approximately 38 WTGs and 1 OSS will be installed within an area of approximately 80.3 km² (19,843 acres).

US Wind plans to install all monopile or pin pile foundations via impact pile driving. If suction bucket foundations are selected for OSS jacket foundations, impact pile driving would not be necessary. US Wind will also conduct the following supporting activities: temporarily install and subsequently remove gravity cells to connect the offshore export cables to onshore facilities; permanently install scour protection around all foundations; permanently install and perform trenching, laying, and burial activities associated with the export cables from

the OSSs to shore-based switching and sub-stations and WTG inter-array cables; and, during years 2 and 3, perform HRG surveys using active acoustic sources with frequencies of less than 180 kilohertz (kHz). To transport crew, supplies, and materials to support construction activities, vessels will transit within the Lease Area, along cable corridors, and between the project area and anticipated ports (Port Norris, NJ; Lewes, DE; Ocean City, MD; Baltimore, MD; Hampton Roads, VA; and Cape Charles, VA).

Up to four offshore export cables will be located among up to two corridors from the OSSs and connect to the planned landfall at either 3R's Beach or Tower Road within Delaware Seashore State Park. When the cables reach the

landfall site, they will be pulled into a cable duct generated by horizontal directional drilling (HDD), which will route the cables under the existing beach to subterranean transition vaults. All offshore cables will be connected to onshore export cables at the sea-to-shore transition point via trenchless installation (*i.e.*, underground tunneling utilizing micro tunnel boring installation methodologies).

Fishery monitoring surveys, performed via recreational boat-based surveys and a pot-based monitoring approach using ropeless gear technology, will be conducted in conjunction with the University of Maryland Center for Environmental Science (UMCES) to enhance existing data for specific benthic and pelagic species of concern.

Dates and Duration

As described above, US Wind will conduct 3 campaigns over 3 years: MarWin, Momentum Wind, and Future Development (table 1). Based on US Wind’s planned schedule, the installation of all permanent structures will be completed by the end of November 2027. More specifically, US Wind will install piles only between May 1 and November 30. Also, the installation of WTG foundations and OSS 3-m pin pile jacket foundations will occur during daylight hours between May 1 and November 30 of 2025, 2026, and 2027 (table 2); however, NMFS would allow nighttime pile driving if US Wind submits, and NMFS approves, an Alternative Monitoring Plan, as discussed below. The single

Met tower foundation will be installed in 2026 (table 2). US Wind anticipates HRG surveys using sparkers and boomers to occur during 2026 and 2027. Up to 14 days of HRG survey activity are planned from April through June 2026 during the Momentum campaign. In addition, up to 14 days of HRG survey activity are planned from April through June 2027 during the Future Development campaign. Currently, US Wind is not planning to conduct activities that have the potential to result in take in 2028 and 2029. However, while table 2 represents US Wind’s current schedule, NMFS recognizes the potential for activity schedules to shift such that they could occur during different timeframes within the five year effective period of this rule.

TABLE 2—US WIND’S ANTICIPATED CONSTRUCTION AND OPERATIONS SCHEDULE DURING THE EFFECTIVE PERIOD OF THE LOA ¹

Project activity	Construction campaign	Expected timing ²	Expected duration (approximate)
Scour Protection Pre-Installation	MarWin	Year 1: Q2 through Q3 of 2025	21 days.
	Momentum Wind	Year 2: Q2 through Q3 of 2026	55 days.
	Future Development	Year 3: Q2 through Q3 of 2027	38 days.
WTG Foundation Installation ^{3,5}	MarWin	Year 1: June through September of 2025 ..	21 days.
	Momentum Wind	Year 2: May through August of 2026	55 days.
	Future Development	Year 3: June through August of 2027	38 days.
Scour protection post-installation	MarWin	Year 1: Q2 through Q3 of 2025	42 days.
	Momentum Wind	Year 2: Q2 through Q3 of 2026	110 days.
	Future Development	Year 3: Q2 through Q3 of 2027	76 days.
OSS Foundation installation ^{3,5}	MarWin	Year 1: July of 2025	1 day.
	Momentum Wind	Year 2: July of 2026	2 days.
	Future Development	Year 3: July of 2027	1 day.
Met Tower installation ^{3,4}	Momentum Wind	Year 2: June of 2026	1 day.
HRG surveys ⁵	Momentum Wind	Year 2: Q2 through Q3 of 2026	14 days.
	Future Development	Year 3: Q2 through Q3 of 2027	14 days.
Site preparation	n/a	Not anticipated	n/a.
Inter-array cable installation	MarWin	Year 1: Q2 through Q4 of 2025	42 days.
	Momentum Wind	Year 2: Q2 through Q4 of 2026	110 days.
	Future Development	Year 3: Q2 through Q4 of 2027	76 days.
Export cable installation	MarWin	Year 1: Q1 through Q4 of 2025	60 days.
	Momentum Wind	Year 2: Q1 through Q4 of 2026	120 days (2 cables).
	Future Development	Year 3: Q1 through Q4 of 2027	60 days.
Fishery monitoring surveys	MarWin	Q1 through Q4 Years 1–5	16 days/year for commercial pot surveys.
	Momentum Wind		12 days/year for recreational surveys.
	Future Development		

¹ Currently, US Wind is not planning to conduct activities that have the potential to result in take in 2028 and 2029. However, while table 2 represents US Wind’s current schedule, NMFS recognizes the potential for activity schedules to shift such that they could occur during different timeframes within the five year effective period of this rule.

² Installation timing will depend on vessel availability, contractor selection, weather, and more. Year 1 is anticipated to be 2025, year 2 to be 2026, and year 3 to be 2027, although these are subject to change per the factors identified. *Note:* “Q1, Q2, Q3, and Q4” each refer to a quarter of the year, starting in January and comprising 3 months each. Therefore, Q1 represents January through March, Q2 represents April through June, Q3 represents July through September, and Q4 represents October through December.

³ The months identified here represent US Wind’s planned schedule; however, in case of unanticipated delays, foundation installation may occur between May 1 and November 30 annually.

⁴ US Wind anticipates that all WTGs, OSS, and Met tower foundations will be installed by November 30, 2027; however, unanticipated delays may require some foundation pile driving to occur in years 4 (2028) or 5 (2029).

⁵ Represents HRG surveys that may result in take of marine mammals. US Wind plans to conduct HRG surveys that are not expected to result in take of marine mammals during Q2 through Q3 of year 1 given those surveys would utilize equipment all operating over 180kHz or have no acoustic output.

Specified Geographic Region

A detailed description of the Specific Geographic Region, identified as the Mid-Atlantic Bight, is provided in the proposed rule (89 FR 504, January 4, 2024). Since the proposed rule was published, no changes have been made

to the Specified Geographic Region. Generally, US Wind’s specified activities (*i.e.*, impact pile driving of monopile and jacket foundations; placement of scour protection; trenching, laying, and burial activities associated with the installation of the ECRs and inter-array cables; HRG site

characterization surveys; and WTG operation) are concentrated in the Lease Area and ECRs offshore of Maryland. However, vessel transit from ports as far south as Virginia and as far north as New Jersey are anticipated.

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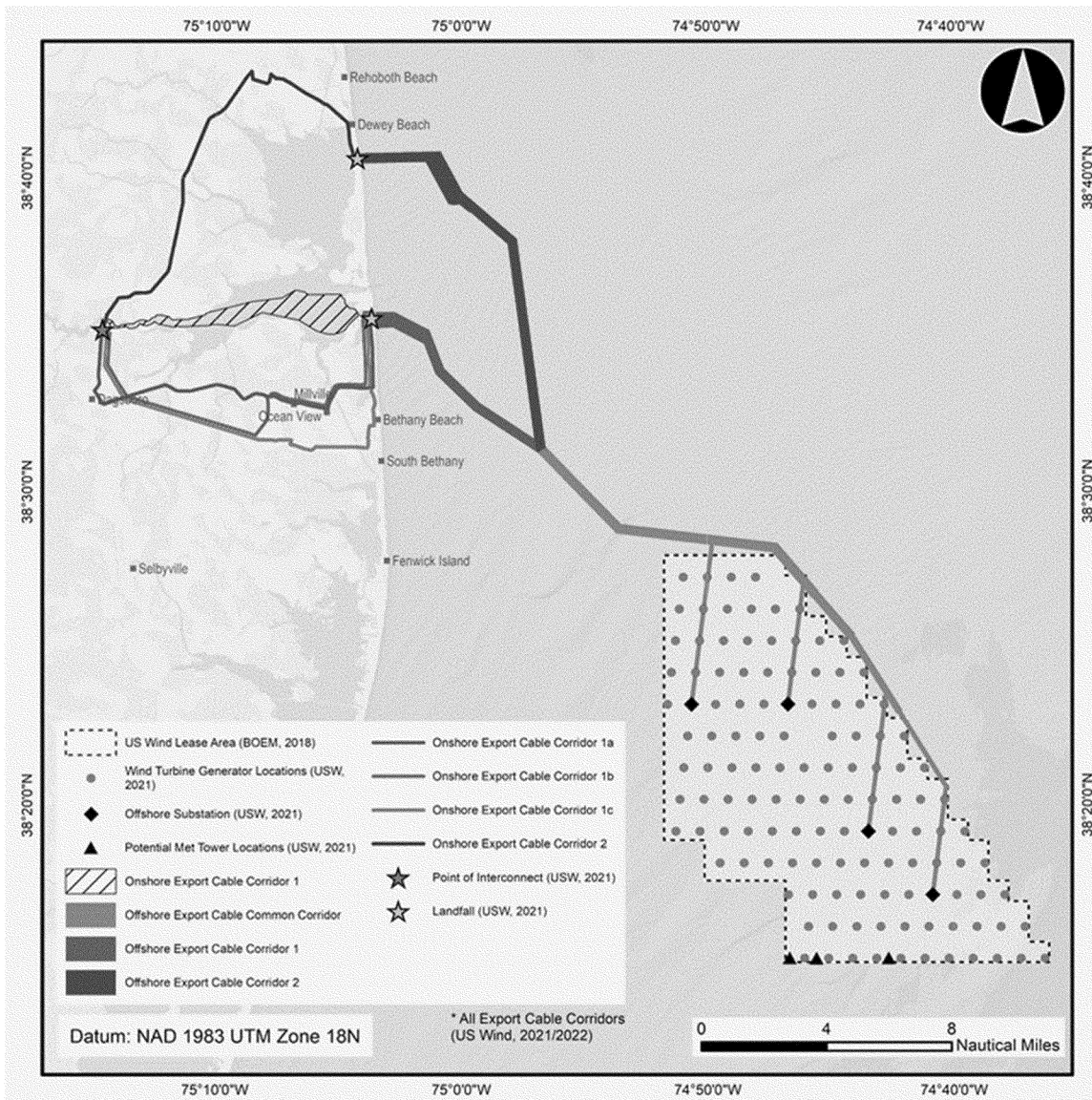


Figure 1 – The Maryland Offshore Wind Project Area

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Comments and Responses

NMFS published a proposed rule in the **Federal Register** on January 4, 2024 (89 FR 504) for a 30-day public comment period. The proposed rule described, in detail, US Wind’s specified activities, the specific geographic region of the specified activities, the marine mammal species that may be affected by those activities, and the anticipated effects on marine mammals. In the proposed rule, we requested that interested persons submit relevant information, suggestions, and comments on US Wind’s request for the promulgation of regulations and issuance of an associated LOA described therein, our estimated take analyses, the preliminary determinations, and the proposed regulations.

NMFS received 114 comment submissions, including from the Marine Mammal Commission (Commission), Delaware Department of Natural Resources (DDNC), Town of Fenwick Island, several non-governmental organizations, and individual citizens, all of which are available for review on www.regulations.gov. Most of these comments were out-of-scope or not applicable to the Project (e.g., general opposition to or support of offshore wind projects; concerns for other species outside NMFS’ jurisdiction (e.g., birds and horseshoe crabs) methods for conducting site condition identification, support for the proposed rule and the Project, concern for energy distribution and power from the Project, beach erosion and flooding, critique of the Maryland offshore wind congressional

hearing held in January 2024), and are not described herein or discussed further. Non-governmental organizations included: Caesar Rodney Institute (CRI), Town of Fenwick Island (TFI), Wrecker Sportfishing, Deep Sea Defenders, and Tower Shore Beach Association. We have responded to all comments that contained substantive information and considered that information in this final rule, including comments related to the estimated take analysis, final determinations, and final mitigation, monitoring, and reporting requirements. A summary of comments is described below, along with NMFS’ responses.

Modeling and Take Estimates

Comment 1: The Commission notes that, based upon SFV reports,

discrepancies exist between modeled and measured Level A harassment and Level B harassment zones. The Commission indicates that these discrepancies may be related to actual installation conditions and should be accounted for in the estimation of harassment zones, authorized number of takes, and mitigation, monitoring, and reporting requirements for the Maryland Wind Offshore Wind Project. The Commission recommends that NMFS provide the interim and/or final SFV reports for South Fork and Vineyard Wind 1 and allow for another 30-day public comment period for the Maryland Wind proposed rule before issuing a final rule.

Response: Based on the discussion below and given our consideration of the best available scientific information, including available sound field verification (SFV) reports from other offshore wind construction projects in the United States, we disagree with the suggestions made by the Commission. The Commission has expressed concerns about the lack of validation of source models in previous Commission letters. Since the proposed rule was published, NMFS has received interim/final sound field verification reports from the South Fork Wind project. In all but one case, the measured distances to NMFS' Level B harassment threshold were lower than the model predicted. The distance to NMFS' Level B harassment threshold for the South Fork project was modeled as 4.68 kilometers (km) while in-situ measurements identified distances ranging from 1.84 km to 3.25 km. MAI's modeling predicts the distances to the Level B harassment threshold during installation of the Maryland Wind 11-m monopiles will be approximately 5.25 km which is less than 1 km larger than South Fork's modeled distance. We note that South Fork determined that one pile generating noise levels above those predicted (the first pile) did so due to a malfunctioning noise attenuation system which was quickly rectified and deployed appropriately on all future piles.

Since the public comment period ended on the proposed rule, NMFS has also received SFV reports from Vineyard Wind 1. However, due to the hammer energy assumption in the model versus what was used in the field (*i.e.*, more hammer energy was used than modeled) and other operational challenges, it is more challenging to compare the VW measured results directly to the modeled results, although the modeled distances to the Level A harassment threshold were larger (the largest modeled distance to the Level A

harassment threshold was for low-frequency cetaceans at 3.191 km) than distances to the Level A harassment threshold measured by SFV. The final SFV report for the 2023 construction of the Vineyard Wind 1 Offshore Wind Project is currently posted on our website (<https://www.fisheries.noaa.gov/action/incidental-take-authorization-vineyard-wind-1-llc-construction-vineyard-wind-offshore-wind>).

Importantly, in this final rule, should SFV results reveal noise levels are louder than those predicted assuming 10 dB attenuation, NMFS is requiring US Wind to implement additional measures to reduce sound levels such that they do not exceed those modeled assuming 10 dB. US Wind is required to conduct either thorough or abbreviated monitoring on all foundation piles installed.

NMFS has incorporated the best available scientific information into this final rule, using recent measurements as well as estimates obtained through modeling. In regards to the Commission's comment recommending another 30-day comment period for the proposed rule, NMFS disagrees with this recommendation and has determined that one 30-day comment period for the proposed rule is sufficient under the MMPA. The MMPA requires notice and opportunity for public comment. The 30-day public comment period for the Maryland Offshore Wind Project proposed rule was open to the public from January 4, 2024 through February 5, 2024. NMFS fulfilled the requirements of the MMPA by providing notice in the **Federal Register** and opportunity for public comment on this proposed rule.

Comment 2: The Caesar Rodney Institute (CRI) notes that NMFS has not established a standard version of estimated population abundances that should be used when evaluating ITA requests. CRI indicates that North Atlantic right whale best population abundance estimates vary between projects, ranging from 338 North Atlantic right whales (for the proposed Maryland Wind Offshore Wind Project proposed rule (89 FR 504, January 4, 2024)) to 346 and 394 North Atlantic right whales (for other projects). The CRI recommends that NMFS establish a North Atlantic right whale population abundance to be used in all applications, as well as a maximum allowed estimated population density for the months for which construction would take place.

Response: The MMPA and its implementing regulations require that incidental take regulations be

established based on the best available information. The dynamic nature of population science dictates that rulemakings will not be using the same population numbers from year to year. NMFS generally considers the information in the most recent U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments Report (SAR; Hayes *et al.*, 2023) to be the best available information for a particular marine mammal stock because of the MMPA's rigorous SAR procedural requirements, which includes peer review by a statutorily established Scientific Review Group. Since publication of the proposed rule, NMFS has released the draft 2023 Stock Assessment Report indicating the North Atlantic right whale population abundance is estimated as 340 individuals based on sighting data through December 31, 2021 (88 FR 5495, January 29, 2024). NMFS has used the most recent best available scientific information in the analysis of this final rule. This new estimate, which is based on the analysis from Pace *et al.* (2017) and subsequent refinements found in Pace (2021), provides the best available, and in this case most recent, estimate, including improvements to NMFS' right whale abundance model. NMFS notes this estimate aligns with the 2022 North Atlantic right whale Report Card (Pettis *et al.*, 2022) estimate (also 340) based on sighting data through August 2022 but, as described above, that the SARs are peer reviewed by other scientific review groups prior to being finalized and published and that the Report Card does not undertake this process. Based on this, NMFS has considered all relevant information regarding North Atlantic right whales, including the information cited by the commenters. However, NMFS has relied on the draft 2023 SAR in this final rule as it reflects the best available scientific information.

We note that this change in abundance estimate does not change the estimated take of North Atlantic right whales or authorized take numbers, nor affect our ability to make the required findings under the MMPA for US Wind's construction activities.

While NMFS does not require applicants to utilize specific models for the purposes of estimating take incidental to offshore wind construction activities, we evaluate the models used to support take estimates to ensure that they are methodologically sound and incorporate the best available science. NMFS does require use of the Roberts *et al.* (2016, 2023) density data and SARs abundance estimates for all species, both of which represent the best

available science regarding marine mammal occurrence.

Mitigation

Comment 3: Multiple commenters recommend strengthening mitigation measures for endangered species to minimize take by Level A harassment, specifically indicating that shutdown zones required by the proposed rule for fin and sei whales should be expanded to encompass the distance to the Level A harassment thresholds. One commenter stated that, legally, no take of endangered species by Level A harassment should be allowed.

Response: NMFS agrees with the commenters that take of endangered species, such as fin and sei whales, by Level A harassment should be minimized. As such, the shutdown zones for fin and sei whales encompass the modeled maximum $R_{95\text{percent}}$ distance to the Level A harassment threshold from the pile driving location, as described in the Mitigation section of this final rule. NMFS disagrees that additional or modified mitigation measures are necessary to affect the least practicable adverse impact on marine mammal species or stocks, including those listed under the ESA. This rule allows a limited number of Level A harassment takes to be authorized for two ESA-listed species (fin whale and sei whale) incidental to foundation impact pile driving (table 6). We note these take estimates did not consider mitigation measures other than seasonal restrictions and 10 dB of sound attenuation. Some mitigation measures in the proposed rule and this final rule are centered around North Atlantic right whales because of the species status and general fitness of individuals.

If clearance and shutdown zones were increased for fin and sei whales, it would likely further lengthen construction time frames, prolonging the time periods over which marine mammals may be exposed to construction-related stressors (as well as creating impracticable operational scenarios for the applicant). Southall et al. (2021) modeled multiple scenarios with different total construction season lengths and the results suggest that generally shorter construction periods are associated with lower risk, which aligns with the concept that more days of noise exposure and disturbance are associated with greater impacts. Accordingly, NMFS has determined that the current clearance and shutdown zones, together with other mitigation measures, affect the least practicable adverse impact on marine mammals. Lastly, regarding the comment that no Level A harassment of ESA-listed

species should be authorized—the MMPA mandates that NMFS shall authorize the take of marine mammals, provided the required findings are made. As required, NMFS has determined that the Level A and Level B harassment allowed under this rule will have a negligible impact on all marine mammal species and stocks and that the required measures affect the least practicable adverse impact on marine mammal species or stocks.

Comment 4: A commenter suggests that it should be clearly stated in the proposed rule that US Wind should be responsible for prompt veterinary care, rehabilitation, and/or handling of any mortally wounded marine mammals incidentally taken during the proposed activities.

Response: No serious injury or mortality is anticipated or authorized for US Wind's planned activities. In the event of sighting any injured marine mammals, US Wind would be required to follow reporting measures as described in the Reporting section and 217.345(f)(15)(iv), which include contacting the regional stranding hotline. Further, it would not be appropriate to require US Wind to be responsible for veterinary care, rehabilitation, and/or handling of any marine mammal injury or stranding cases.

The best available science indicates that the anticipated impacts from the specified activities potentially include avoidance, cessation of foraging or communication, TTS and PTS, stress, masking, etc. (as described in the *Effects of the Specified Activities on Marine Mammals and their Habitat* section in the proposed rule). NMFS emphasizes that there is no evidence that noise resulting from offshore wind development-related specified activities would cause marine mammal strandings, and there is no evidence linking recent large whale mortalities and currently ongoing offshore wind activities. This point has been well supported by other agencies, including BOEM and the Marine Mammal Commission (Marine Mammal Commission Newsletter, Spring 2023). If the best available science indicates the takings allowed under these regulations may be having more than a negligible impact, NMFS must suspend or withdraw the LOA after notice and opportunity for public comment.

If a marine mammal appears to be injured or strands nearby during construction activities, the Marine Mammal Health and Stranding Response Program (MMHSRP), established by the MMPA, would be responsible for mobilizing a response, if

and where appropriate. This program coordinates emergency responses to sick, injured, distressed, or dead seals, sea lions, dolphins, porpoises, and whales. The MMHSRP works with volunteer stranding and entanglement networks as well as local, tribal, state, and federal government agencies to coordinate and conduct emergency responses to stranded or entangled marine mammals. The networks also respond, when safe and feasible, to document and recover carcasses. It does not and cannot respond to every stranded marine mammal, and it is not responsible for disposing of carcasses. The type of examination conducted varies and depends on availability of resources, location, carcass accessibility, and the decomposition state. A necropsy report, when written, includes data which are compiled over several weeks to months and then analyzed for a possible cause of death determination and findings. National and Regional summaries of stranding statistics are available at: <https://www.fisheries.noaa.gov/resource/publication-database/marine-mammal-health-and-stranding-response-program-reports>. Any strandings or marine mammals in need of care that occur in the vicinity of the Project Area during the specified activities would be the responsibility of the local stranding and/or entanglement network authorized by the MMHSRP.

Comment 5: The DNREC recommends extending the seasonal restriction on impact pile driving to November 1 through April 30, a time period reflecting highest activity levels of North Atlantic right whales, to reduce risk to North Atlantic right whales.

Response: NMFS has restricted foundation installation pile driving from December through April, a time period which represents the times of year when North Atlantic right whales are most likely to be in the project area. However, we recognize that the density of North Atlantic right whales begins to elevate in November, as shown by Roberts et al. (2023). US Wind's planned pile driving activity schedule does not include pile driving in November. However, a limited amount of pile driving in November may occur if the Project experiences significant delays. Should pile driving in November be necessary, US Wind has agreed to restrict pile driving to the maximum extent practicable. In any time of year when foundation installation is occurring, a visual sighting of a North Atlantic right whale by foundation installation PSOs or an acoustic detection within a 10 km PAM monitoring zone triggers a delay in pile driving commencement or shutdown. These mitigation measures

are designed to reduce takes of North Atlantic right whales to the maximum extent possible.

NMFS neither anticipates nor authorizes take of North Atlantic right whales by Level A harassment (PTS) from this activity. While NMFS is authorizing a total of 10 takes by Level B harassment of North Atlantic right whales incidental to any Project activities over the 5-year effective period of this rulemaking, the required mitigation will affect the least practicable adverse impact on the species from these activities. Specifically, the largest modeled Level B harassment zone size (5.25 km) is for impact pile driving of the 11-m monopiles, however the clearance and shutdown zone for North Atlantic right whales for impact pile driving is any distance. Any Level B harassment that is not avoided is not expected to impact important feeding or other behaviors that may occur in the Project Area in a manner that would pose energetic or reproductive risks for any individuals. NMFS also notes that North Atlantic right whale presence, while not completely absent, decreases significantly during summer months as compared to winter when the majority of foundation installation would occur. For these reasons, NMFS finds that expanded temporal restrictions are not warranted.

Comment 6: DNREC suggests that NMFS should require US Wind to maintain the 500-meter separation distance for North Atlantic right whales for all in-water construction activities, including activities for which take is not requested. The commenters further note that increased noise levels may increase stress in North Atlantic right whales, and the commenters, as well as the Caesar Rodney Institute, recommend that NMFS should not approve any offshore wind activities that may further impact North Atlantic right whales.

Response: NMFS disagrees with the commenter's suggestion for requiring a 500-m separation distance for North Atlantic right whales for all in-water construction activities. The required vessel separation distance from North Atlantic right whales during vessel transit and HRG surveys is 500 m, and the North Atlantic right whale clearance and shutdown zones are "any distance" for impact pile driving activities, exceeding the Level B harassment zone of 5.25 km and further reducing the likelihood of harassment for North Atlantic right whales in the area. As noted by the commenter, NMFS will require US Wind to cease activities in response to any marine mammal on a path toward or that comes within 10 m

of in-water construction equipment involving heavy machinery other than pile driving (e.g., trenching, cable laying, etc.). These non-pile driving in-water construction operations are relatively low impact (take is not anticipated or authorized) and the goal of the 10 m separation distance is to prevent contact between marine mammals and heavy construction equipment, rather than to limit exposure to noise. NMFS has determined that an increase in the shutdown distance for these in-water construction operations involving heavy equipment and not anticipated to result in incidental take is not necessary to affect the least practicable adverse impact.

The commenters' recommendation for NMFS to not approve offshore wind activities that may impact North Atlantic right whales is outside the scope of this final rule as NMFS does not approve offshore wind activities; NMFS only authorizes take of marine mammals incidental to these activities. NMFS is required to authorize the requested incidental take if it finds the total incidental take of small numbers of marine mammals by U.S. citizens "while engaging in that (specified) activity" within a specified geographical region during the 5-year period (or less) will have a negligible impact on such species or stock and, where applicable, will not have an unmitigable adverse impact on the availability of such species or stock for subsistence uses (16 U.S.C. 1371(a)(5)(A)). As described in the proposed rule and this final rule, NMFS has included requirements for mitigation measures that effect the least practicable adverse impact on all marine mammal species or stocks, including North Atlantic right whales, and their habitat, as required under the MMPA (16 U.S.C. 1371(a)(5)(A)(i)(II)).

Comment 7: Commenters note that there is a higher potential of vessel strikes as whales may respond to noise harassment by leaving or avoiding the Lease Area and moving into high traffic shipping lanes. The commenters further note that avoidance of the Project Area may increase stress and confusion for whales, resulting in an increased potential for vessel strikes and entanglement.

Response: NMFS disagrees that there is necessarily a higher potential for vessel strikes specifically due to whales leaving the area to avoid noise from project activities. NMFS analyzed the potential for vessel strike in the proposed rule. While acknowledging that whales may temporarily avoid the area where the specified activities occur and that elevated stress levels is a potential response to noise exposure,

NMFS does not anticipate, based on the best available science, that whales will abandon their habitat, be displaced in a manner that would specifically result in a higher risk of vessel strike, or become confused in a manner that would specifically result in a higher risk of vessel strike. The commenter does not provide evidence and no evidence identified by NMFS has found that this would be a reasonably anticipated outcome of the specified activity. The primary activity that is anticipated to result in temporary avoidance of the otherwise used habitat is foundation installation impact pile driving. Further, not only would this activity be limited to times of year when North Atlantic right whale presence is low, pile driving would be intermittent, and pile driving would only occur for a limited time over the course of three years, with PSOs monitoring both visual and acoustic cues. Any sighting of a North Atlantic right whale within any distance from pile driving activities would immediately halt such activity until the North Atlantic right whale left the area of their own volition.

Comment 8: DNREC indicates proper site condition identification should be conducted to minimize the need for US Wind to waive the shutdown requirement for pile refusal or pile instability purposes. DNREC further notes that HRG micro-siting surveys should be used to identify any seabed debris, unexploded ordnances, or other substrate conditions that could negatively impact pile driving operations.

Response: The need to waive the shutdown requirement due to pile refusal is expected to be low. However, regardless, additional surveying to assess the likelihood of pile refusal in advance would not change the need to waive the shutdown if necessary for human safety or to avoid equipment damage. Regarding the detection of unexploded ordnance, US Wind plans to conduct HRG micro-siting surveys to identify potential UXOs for avoidance of Project activities. US Wind has provided the information necessary for NMFS to conduct its analysis and make the necessary determinations, and additional survey requirements are not warranted.

Monitoring, Reporting, and Adaptive Management

Comment 9: The Commission recommends that NMFS ensure that the mitigation, monitoring, and reporting requirements for the construction of wind energy facilities are sufficiently detailed from the start and specified in the proposed rule so that these measures

are available for public comment. The Commission indicates that by not requiring US Wind to include mitigation and monitoring plans for the specified activities as part of the proposed rule, NMFS is not able to assess whether US Wind would be able to successfully implement mitigation measures adequate to effect the least practicable adverse impact on marine mammal species and the transparency of the public review process is compromised. The Commission suggests that US Wind submit the SFV plan, foundation pile driving plan, and PAM plan to NMFS for approval in advance of promulgating the final rule, and NMFS should post these plans for public comment. In particular, the Commission indicates that NMFS include the number of platforms that would be required to monitor for marine mammals during foundation installation.

Response: Due to other concurrent permitting processes and acknowledging the need for flexibility and project-specific implementation, NMFS disagrees these plans must be submitted prior to promulgating the final rule. The purpose of the Plans is for the developer to provide details to NMFS on how they would satisfy the criteria identified in the rule. These criteria are available for public review and comment.

In regards to the Commission's recommendation to include a requirement for the number of monitoring platforms during foundation installation, NMFS has added a requirement to the final rule at § 217.345 Monitoring and Reporting Requirements for a minimum of 3 monitoring platforms during foundation installation. US Wind will be required to employ a minimum of 3 active PSOs monitoring from the foundation installation vessel as well as a minimum of 3 active PSOs monitoring from PSO vessels. US Wind must employ at least two PSO vessels for monitoring during foundation installation.

Comment 10: A commenter recommends that the monitoring area should be expanded beyond the 125 square mile (80,000 acres) Maryland Wind Energy Area (MDWEA) to ensure that project activities can be halted in time for animals to pass through the area unharmed. The commenter further notes that the monitoring area should be expanded before any decisions are made.

Response: NMFS disagrees with the commenter that the planned monitoring area should be expanded beyond the boundaries of the MDWEA. As described in the proposed rule and this final rule, NMFS is requiring that US

Wind employ both visual and PAM methods for monitoring, as both approaches aid and complement each other (Van Parijs *et al.*, 2021). The use of PAM will augment visual detections for foundation pile driving, especially for activities with the largest zones, to expand observer coverage of the area. NMFS is requiring the use of PAM to monitor 10 km zones around the piles and that the systems be capable of detecting marine mammals during pile driving within this zone. In addition, NMFS is requiring US Wind to establish species-specific clearance and shutdown zones during impact pile driving and HRG surveys. The purpose of clearance and shutdown zones are to minimize and prevent potential instances of auditory injury and more severe behavioral disturbances by delaying the commencement of activity or halting the activity. NMFS has determined that the planned suite of mitigation and monitoring measures described in the proposed rule and this final rule are sufficient to effect the least practicable adverse impact on marine mammal species in the project area.

Effects Assessment

Comment 11: Multiple commenters note that the LOA should not be issued until the cumulative effects of all proposed projects are fully considered. Commenters further indicate that the MMPA rulemaking does not assess cumulative impacts on the affected marine mammal species, that the ITA does not align with NEPA, and that the NEPA process is incomplete. Commenters further indicate that the ITA should not be issued until the EIS is complete.

Response: NMFS is required to authorize the requested incidental take if it finds the total incidental take of small numbers of marine mammals by U.S. citizens "while engaging in that (specified) activity" within a specified geographical region will have a negligible impact on such species or stock and, where applicable, will not have an unmitigable adverse impact on the availability of such species or stock for subsistence uses (16 U.S.C. 1371(a)(5)(A)). Negligible impact is defined as "an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effect on annual rates of recruitment or survival" (50 CFR 216.103). Consistent with the preamble of NMFS' implementing regulations (54 FR 40338, September 29, 1989), the impacts from other past and ongoing anthropogenic activities are factored into the baseline, which is used

in the negligible impact analysis. Here, NMFS has factored into its negligible impact analysis the impacts of other past and ongoing anthropogenic activities via their impacts on the baseline (*e.g.*, as reflected in the density/distribution and status of the species, population size and growth rate, and other relevant stressors).

The preamble of NMFS' implementing regulations also addresses cumulative effects from future, unrelated activities. Such effects are not considered in making the negligible impact determination under MMPA section 101(a)(5). NMFS considers: (1) cumulative effects that are reasonably foreseeable when preparing a National Environmental Policy Act (NEPA) analysis; and (2) reasonably foreseeable cumulative effects under section 7 of the ESA for ESA-listed species, as appropriate. Accordingly, NMFS has reviewed BOEM's FEIS as part of its inter-agency coordination and determined that the analysis in the FEIS for the Maryland Wind Offshore Wind Project is sufficient to cover the scope of the marine mammal incidental take authorization described in this final rule.

This FEIS addresses cumulative impacts related to the Project and substantially similar activities in similar locations. Cumulative impacts regarding the promulgation of regulations and issuance of an LOA for activities planned by US Wind have been adequately addressed in the adopted EIS that supports NMFS' determination that this action has been appropriately analyzed under NEPA. Separately, the cumulative effects of the Project on ESA-listed species, including the North Atlantic right whale, were analyzed under section 7 of the ESA when NMFS engaged in formal inter-agency consultation with the NOAA Greater Atlantic Regional Field Office (GARFO) and initiated consultation on December 5, 2023. The Biological Opinion (BiOp) for the Project determined that NMFS' promulgation of regulations and issuance of an LOA for activities, individually and cumulatively, are likely to adversely affect, but not jeopardize, listed marine mammals.

The FEIS was finalized by BOEM on August 2, 2024 and adopted by NMFS on September 4, 2024, thus completing the NEPA process.

Comment 12: Multiple commenters recommend that NMFS consider the impacts of structure presence and operations, including those from operational noise on marine mammals as well as ocean mixing and vibrations on phytoplankton, zooplankton, and the food chain. A commenter noted that

analysis of incidental take during wind turbine operation is insufficient. Commenters indicate that NMFS should consider the impacts of operational noise on marine mammals since construction and operation will proceed simultaneously, and actual take from construction may be masked by any take related to operational noise.

Commenters further suggest the LOA should include a full analysis of impacts of operational noise and recommend that offshore wind energy projects be pushed back a minimum of 20 kilometers (km) from areas used by North Atlantic right whales for feeding and other life history activities.

Response: In the proposed rule, NMFS considered the impacts to marine mammals from operational noise and to their habitat, including prey, based on the best available science. In this final rule, NMFS has supplemented that analysis with new scientific information that has become available regarding these issues since publishing the proposed rule. This new information does not change our findings. The commenters did not provide scientific evidence that suggests the analysis within the proposed rule was unsupported. NMFS has fully evaluated the potential impacts of operational noise from issuing this final rule authorizing take of marine mammals over the five year effective period of this rulemaking and the potential impacts from long-term operations via the BiOp. We refer the reader to the Effects of the Specified Activities on Marine Mammals and Their Habitat section and the Negligible Impact Determination section in the proposed and this final rule for further details. In addition, US Wind will be required to use sound field verification (SFV) for measuring operational noise as wind turbines become operational to further evaluate the impacts of operational noise on marine mammals and their habitat.

In regards to moving the Project a minimum of 20 km away from North Atlantic right whale habitat, NMFS disagrees with this recommendation. As noted in the proposed rule, the Project Area overlaps with a North Atlantic right whale biologically important area (BIA) for migration but not with any feeding, breeding, or calving areas. The area over which North Atlantic right whales may be harassed is relatively small compared to the width of the migratory corridor. The width of the migratory corridor in this area is approximately 163.8 km while the width of the Lease Area, at the longest point, is approximately 33.1 km. North Atlantic right whales may be displaced from their normal path and preferred

habitat in the immediate activity area (primarily from pile driving activities), however, we do not anticipate displacement to be of high magnitude (e.g., beyond a few kilometers); thereby, any associated bio-energetic expenditure is anticipated to be small.

Comment 13: Several commenters claimed the request for an ITA should be denied alleging the specified activities kill as well as harm marine mammals and some commenters suggested that the ongoing whale UMEs, including the whale deaths occurring in the winter of 2022–2023, are linked with ongoing offshore wind activities. One commenter further claimed that although “the recent deaths and strandings of whales and other marine mammals along the eastern seaboard have not been proven to be the direct result of offshore wind activities, these activities have not been disproven as a contributing factor.”

Response: NMFS disagrees that the ITA should be denied, as we have made the necessary findings required by the MMPA for issuance and these findings are supported by the necessary analyses and best available science. Neither the proposed rule nor this final rule allow mortality or serious injury of marine mammals to be authorized. The best available science indicates that the anticipated impacts from the specified activities potentially include avoidance, cessation of foraging or communication, TTS and PTS, stress, masking, etc. (as described in the Effects of the Specified Activities on Marine Mammals and their Habitat section in the proposed rule). NMFS emphasizes that there is no evidence that noise resulting from offshore wind development-related specified activities would cause marine mammal strandings, and there is no evidence linking recent large whale mortalities and currently ongoing offshore wind activities. The commenters offer no such evidence or other scientific information to substantiate their claim. This point has been well supported by other agencies, including BOEM and the Marine Mammal Commission (Marine Mammal Commission Newsletter, Spring 2023). Additionally, a recent paper by Thorne and Wiley (2024) reviewed spatiotemporal patterns of strandings, mortalities, and serious injuries of humpback whales along the US East Coast from 2016–2022. Humpback whales were chosen as a case study for this analysis as they are currently undergoing a UME and strand more often than other large whale species. Thorne and Wiley (2024) found vessel strikes to be a major driver in the increase of humpback whale strandings,

mortalities, and serious injury along the east coast. The potential for vessel strike increased during the study period due to increased vessel traffic in new foraging areas, the increased presence of juvenile humpback whales, and humpback whale foraging in shallow areas that overlap with vessel traffic. Based upon the spatiotemporal analysis, no evidence was found that offshore wind development played a role in the increased number of strandings over time. Future studies should focus on gaining a greater understanding of spatial and seasonal habitat use patterns of large whales, spatiotemporal changes in prey abundance and distribution, and how habitat use and foraging behavior affect the risk of vessel strike. While several species of delphinids and beaked whales have also stranded off New Jersey since 2011 (per data provided from the National Marine Stranding Network), there is no evidence that the acoustic sources used during HRG surveys contributed to these events. NMFS will continue to gather data to help us determine the cause of death for these stranded whales.

There are ongoing UMEs for humpback whales, North Atlantic right whales, and minke whales along the Atlantic coast from Maine to Florida, which includes animals stranded since 2016 and 2017, respectively, and we provide further information on these UMEs in the species specific subsections in the Description of Marine Mammals in the Specific Geographic Region section of this final rule. Vessel strikes and entanglement in fishing gear are the greatest human threats to large whales. Partial or full necropsy examinations were conducted on approximately half of the humpback whales that recently stranded along the U.S. east coast. Necropsies were not conducted on other carcasses because they were too decomposed, not brought to land, or stranded on protected lands (e.g., national and state parks) with limited or no access. Of the humpback whales examined (roughly 90), about 40 percent had evidence of human interaction, either ship strike or entanglement. Based upon necropsies conducted thus far, the preliminary cause of mortality, serious injury, and morbidity in stranded North Atlantic right whales is entanglement or vessel strike. Full or partial necropsies have been conducted on approximately 60 percent of the stranded minke whales. Preliminary findings have shown evidence of human interaction or infectious disease. The best available science indicates that only a limited

amount of Level A harassment (PTS) or Level B harassment (disruption of behavioral patterns (e.g., avoidance)), may occur as a result of US Wind's specified activities. NMFS emphasizes that there is no credible scientific evidence available suggesting that mortality and/or serious injury is a potential outcome of the planned activities. More information about interactions between offshore wind energy projects and whales can be found at <https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-life-distress/frequent-questions-offshore-wind-and-whales>.

Other

Comment 14: Multiple commenters note that more data are needed on the impact of wind turbine construction and operation on marine mammals, and that projects should be paused until these data are available. Commenters also recommend collecting sound level measurements on similar turbines, such as Vineyard Wind 1 Offshore Wind Farm, to inform the proposed rulemaking and LOA.

Response: The MMPA requires NMFS to evaluate the effects of the specified activities in consideration of the best scientific evidence available and to issue the requested incidental take authorization if it makes the necessary findings. The MMPA does not allow NMFS to delay issuance of the requested authorization on the presumption that new information or new regulations will become available in the future. If new information becomes available in the future, NMFS may modify the mitigation and monitoring measures in an LOA issued under these regulations through the adaptive management provisions, as described in § 217.347c(1) of this final rule. Furthermore, NMFS is required to withdraw or suspend an LOA if, after notice and public comment unless an emergency exists, it determines the authorized incidental take may be having more than a negligible impact on a species or stock. NMFS has duly considered the best scientific evidence available in its issuance of the final rule and made the required findings to issue this rule.

NMFS also notes that, as proposed, this final rule requires that no unmitigated piles can be installed and that SFV is required for piles to ensure that measured sound levels do not exceed those modeled assuming 10 dB of attenuation. NMFS acknowledges the importance of transparency in the reporting process and plans to make all final annual SFV reports available on our website. As mentioned above, since

the publication of the proposed rule NMFS has received SFV reports from Vineyard Wind 1 that, although challenging, allow for comparison between modeled and measured distances to the Level A harassment and Level B harassment thresholds. These results are available on our website at: <https://www.fisheries.noaa.gov/action/incidental-take-authorization-vineyard-wind-1-llc-construction-vineyard-wind-offshore-wind>.

Comment 15: A commenter states that NMFS' review of the ITA application was incomplete and the ITA should be denied. Another commenter further states that approval of the ITA would be a "dereliction of duty" and does not align with NOAA's mission.

Response: NMFS disagrees with the commenter that the ITA should be denied. NOAA's stewardship mission includes our responsibility to uphold and implement the provisions of multiple federal statutes designed to protect environmental resources, including the MMPA. The MMPA allows for the incidental take of marine mammals provided the necessary findings are made. As described in this **Federal Register** notice, NMFS has conducted the necessary analysis to support our negligible impact finding. In addition, we have required mitigation to ensure the least practicable adverse impact on marine mammals and their habitat. We have also included monitoring and reporting requirements to monitor compliance and impacts to marine mammals.

Changes From the Proposed to Final Rule

Since the publication of the proposed rule in the **Federal Register** on January 4, 2024 (89 FR 504), NMFS has made changes, where appropriate, that are reflected in the preamble text of this final rule and the final regulatory text. These changes are briefly identified below, with more information included in the indicated sections of the preamble to this final rule. In addition, reporting requirements on marine mammals have been updated in accordance with Greater Atlantic Regional Fisheries Office (GARFO), Southeast Regional Office (SERO), and the Northeast Fisheries Science Center (NEFSC) most recent guidance.

Changes to Information Provided in the Preamble

The information found in the preamble of the proposed rule was based on the best available information at the time of publication. Since publication of the proposed rule, new information has become available,

which has been incorporated into this final rule as discussed below.

The following changes are reflected in the Description of Marine Mammals in the Specific Geographic Region section of the preamble to this final rule:

Given the release of NMFS' draft 2023 Stock Assessment Report (SAR) (89 FR 5495, January 29, 2024), we have updated the population estimate for the North Atlantic right whale (*Eubalaena glacialis*) from 368 to 340 and the total mortality/serious injury (M/SI) amount from 8.1 to 27.2. This increase is due to the inclusion of undetected M/SI (whereas 8.1 accounted only for detected M/SI). As described in the draft 2023 SARs (89 FR 5495, January 29, 2024), the use of the refined methods of Pace *et al.* (2021), the estimated annual rate of total mortality of adults and juveniles for the period 2016–2020 was 27.2, which is 3.4 times larger than the 8.1 total derived from reported mortality and serious injury for the same period.

Given the availability of new information, we have made updates to the UME summaries for North Atlantic right whales, humpback whales, and minke whales.

The following change is reflected in the Potential Effects of Specified Activities on Marine Mammals and Their Habitat section of the preamble to this final rule:

We have added information relating to the broken blade at the Vineyard Wind 1 Lease Area, the rarity of this event occurring, and that no take was requested, anticipated, proposed, or authorized incidental to blade failure so this is not discussed further in this document.

The following changes are reflected in the Estimated Take, Mitigation, and Monitoring and Reporting sections of the preamble to this final rule:

This final rule requires US Wind to employ a minimum of three monitoring platforms, including the pile driving vessel platform and a minimum of two PSO support vessels. Each platform must employ a minimum of three active on-duty PSOs.

We have also added a requirement for US Wind to cease pile driving activities if there is a live cetacean stranding within 50 km of pile driving activities and the NMFS Marine Mammal Stranding Network is attempting to herd or return animals to the water.

The requirement for PAM operators to receive conditional or unconditional approval was removed as the PAM operators' experience is relevant to all PAM operators and the conditional/unconditional approval framework does not apply.

The educational requirement for PSOs and PAM operators to have received a bachelor's degree from "an accredited college or university" has been removed. PSOs and PAM operators are still required to have received a bachelor's degree, although experience can still be substituted for education.

The requirement for submission of PAM detection data to the NEFSC has been updated due to a change in NEFSC reporting requirements. US Wind must submit full PAM detection data within 90 days after pile driving is complete and every 90-calendar days for transit lane PAM.

Changes in the Regulatory Text

We have made the following changes to the regulatory text, which are reflected, as appropriate, throughout this final rule and described, as appropriate, in the preamble.

We have removed duplicative measures and, for clarity and consistency, we revised paragraph § 217.340(b) of the regulatory text to fully describe the specified geographical region.

We have modified a proposed measure that set hammer energy guidelines during foundation and MET Tower installation to allow greater flexibility in response to the circumstances of the particular installation. We have retained the measures related to actions necessary should SFV identify that distances to NMFS harassment thresholds, regardless of hammer energies, are longer than anticipated.

For consistency, NMFS has included conditions in § 217.344(a) to clarify mitigation requirements discussed in the preamble. The conditions for commencing pile driving and HRG survey activities are clarified.

NMFS has added additional clarification on the authority of PSOs and PAM operators in § 217.344(a) to ensure compliance and proper implementation of the regulations.

NMFS has clarified language in § 217.344(b) to specify that this measure applies to vessels traveling in the specified geographical region and when Project vessels may deviate from vessel speed avoidance measures. NMFS has also defined the term "emergency" for clarity.

In § 217.344(b)(1), (11), and (12), § 217.344(c)(10), and (15), § 217.344(d)(2), § 217.345(a)(2), and (4), § 217.345(b)(2), (4), (8), and (9), NMFS has made minor changes to formatting and wording to more clearly state the requirements.

NMFS has added a requirement for all vessel operators to reduce speed to 10

knots (kn) or less when any large whale (other than a North Atlantic right whale, for which the requirement was already included) or large assemblages of cetaceans are observed within 500 m (0.31 mi) of a transiting vessel in § 217.344(b).

To align with the BiOp, NMFS has modified thorough SFV requirements (§ 217.344) and added a requirement for US Wind to conduct abbreviated SFV monitoring during pile driving activities in § 217.344(c).

NMFS has updated the requirement for US Wind to conduct SFV measurements during turbine operations instead of upon the commencement of turbine operations in § 217.344(c)(16).

In § 217.345(a), NMFS has updated the requirements for PSO and PAM operator qualifications. The requirement for PAM operators to receive conditional or unconditional approval was removed because all PAM operators are subject to a list of qualifications presented in the proposed rule and do not need to obtain conditional or unconditional approval. In addition, the educational requirement for PSOs and PAM operators to receive their bachelor's degrees from an accredited college or university has been removed, although PSOs and PAM operators are still required to have received a bachelor's degree, although experience can still be substituted for education.

In § 217.345(b)(7), NMFS has added a requirement for visual observations of marine mammals by pile driving Project personnel to be reported to on-duty PSOs and vessel captains to increase situational awareness.

In response to comments and to improve detection capabilities, NMFS has added a requirement for a minimum of 3 PSOs to be on-duty on each observation platform during impact pile driving and that, in addition to PSOs on the pile driving vessel, PSOs must also be observing for marine mammals on two dedicated PSO vessels.

In § 217.345(f)(6), NMFS has updated the requirement for reporting PAM detection data due to a change in NEFSC reporting requirements. US Wind must submit full PAM detection data within 90 days after foundation installation ceases.

Description of Marine Mammals in the Area of Specified Activities

As noted in the Changes from the Proposed to Final Rule section, since publication of the proposed rule (89 FR 504, January 4, 2024), updates have been made to the abundance estimate for North Atlantic right whales and the UME summaries of multiple species. These changes are described in detail in

the sections below; otherwise, the Description of Marine Mammals in the Specific Geographic Region section has not changed since the publication of the proposed rule in the **Federal Register** (89 FR 504, January 4, 2024).

Thirty-eight marine mammal species under NMFS' jurisdiction have geographic ranges within the western North Atlantic OCS (Hayes *et al.*, 2023). Sections 3 and 4 of US Wind's application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history of the potentially affected species (US Wind, 2023). Additional information regarding population trends and threats may be found in NMFS' SARs (<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>) and more general information about these species (e.g., physical and behavioral descriptions) may be found on NMFS' website (<https://www.fisheries.noaa.gov/find-species>).

Table 3 lists all species or stocks for which take is authorized under this final rule and summarizes information related to the species or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. PBR is defined as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs; (16 U.S.C. 1362(20)). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats. Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' U.S. Atlantic and Gulf of Mexico SARs. All values presented in table 3 are the most recent available data at the time of publication which can be found in NMFS' 2023 draft SARs (89 FR 5495, January 29, 2024), available online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports>.

TABLE 3—MARINE MAMMAL SPECIES THAT MAY OCCUR IN THE PROJECT AREA AND BE TAKEN, BY HARASSMENT

Common name ¹	Scientific name	Stock	ESA/ MMPA status; strategic (Y/N) ²	Stock abundance (CV, N _{min} , most recent abundance survey) ³	PBR	Annual M/SI ⁴
Order Artiodactyla—Cetacea—Mysticeti (baleen whales)						
<i>Family Balaenidae:</i>						
North Atlantic right whale	<i>Eubalaena glacialis</i>	Western Atlantic	E, D, Y	340 (0; 337; 2021) ⁵	0.7	⁵ 27.2
<i>Family Balaenopteridae (rorquals):</i>						
Fin whale	<i>Balaenoptera physalus</i>	Western North Atlantic	E, D, Y	6,802 (0.24, 5,573, 2021)	11	2.05
Sei whale	<i>Balaenoptera borealis</i>	Nova Scotia	E, D, Y	6,292 (1.02, 3098, 2021)	6.2	0.6
Minke whale	<i>Balaenoptera acutorostrata</i>	Canadian Eastern Coastal	- , - , N	21,968 (0.31, 17,002, 2021) ..	170	9.4
Humpback whale	<i>Megaptera novaeangliae</i>	Gulf of Maine	- , - , Y	1,396 (0, 1,380, 2016)	22	12.15
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
<i>Family Delphinidae:</i>						
Killer whale ⁸	<i>Orcinus orca</i>	Western North Atlantic	- , - , N	UNK (UNK, UNK, 2016)	UNK	0
Long-finned pilot whale ...	<i>Globicephala melas</i>	Western North Atlantic	- , - , N	39,215 (0.3, 30,627, 2021) ...	306	5.7
Short-finned pilot whale ...	<i>Globicephala macrorhynchus</i>	Western North Atlantic	- , - , Y	18,726 (0.33, 14,292, 2021) ..	143	218
Bottlenose dolphin	<i>Tursiops truncatus</i>	Western North Atlantic Off-shore.	- , - , N	64,587 (0.24, 52,801, 2021) ⁶	507	28
Bottlenose dolphin	<i>Tursiops truncatus</i>	Northern Migratory Coastal ...	- , - , Y	6,639 (0.41, 4,759, 2016) ⁷ ...	48	12.2–21.5
Common dolphin	<i>Delphinus delphis</i>	Western North Atlantic	- , - , N	93,100 (0.56, 59,897, 2021) ..	1,452	414
Atlantic spotted dolphin ...	<i>Stenella frontalis</i>	Western North Atlantic	- , - , N	31,506 (0.28, 25,042, 2021) ..	250	0
Pantropical spotted dolphin.	<i>Stenella attenuata</i>	Western North Atlantic	- , D, N	2,757 (0.50, 1,56, 2021)	19	0
Risso's dolphin	<i>Grampus griseus</i>	Western North Atlantic	- , - , N	44,067 (0.19, 30,662, 2021) ..	307	18
Rough-toothed dolphin ⁸ ...	<i>Steno bredanensis</i>	Western North Atlantic	- , - , N	unk (unk, unk, 2021)	undet	0
Striped dolphin ⁸	<i>Stenella coeruleoalba</i>	Western North Atlantic	- , - , N	48,274 (0.29, 38,040, 2021) ..	529	0
<i>Family Phocoenidae (porpoises):</i>						
Harbor porpoise	<i>Phocoena phocoena</i>	Gulf of Maine/Bay of Fundy ...	- , - , N	85,765 (0.53, 56,420, 2021) ..	649	145
Order Carnivora—Pinnipedia						
<i>Family Phocidae (earless seals):</i>						
Harbor seal	<i>Phoca vitulina</i>	Western North Atlantic	- , - , N	61,336 (0.08, 57,637, 2018) ..	1,729	339
Gray seal ⁹	<i>Halichoerus grypus</i>	Western North Atlantic	- , - , N	27,911 (0.20, 23,624, 2021) ..	1,512	4,570
Harp seal	<i>Pagophilus groenlandicus</i>	Western North Atlantic	- , - , N	7.6M (UNK, 7.1M, 2019)	426,000	178,573

¹ Information on the classification of marine mammal species can be found on the web page for The Society for Marine Mammalogy's Committee on Taxonomy (<https://www.marinemammalscience.org/science-and-publications/list-marine-mammal-species-subspecies/>; Committee on Taxonomy (2022)).

² ESA status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR, or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

³ NMFS marine mammal stock assessment reports online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>. CV is the coefficient of variation; N_{min} is the minimum estimate of stock abundance.

⁴ These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike).

⁵ In the proposed rule (89 FR 504, January 4, 2023), a population estimate of 368 was used which represented the best available science at the time of publication. However, since the publication of the proposed rule, a new estimate (n=340) was released in NMFS' draft 2023 SARs and has been incorporated into this final rule. The current draft SAR includes an estimated population (N best 340) based on sighting history through December 2021 (89 FR 5495, January 29, 2024). In October 2023, NMFS released a technical report identifying that the North Atlantic right whale population size based on sighting history through 2022 was 356 whales, with a 95 percent credible interval ranging from 346 to 363 (Linden, 2023); Total annual average observed North Atlantic right whale mortality during the period 2017–2021 was 7.1 animals and annual average observed fishery mortality was 4.6 animals. Numbers presented in this table (27.2 total mortality and 17.6 fishery mortality) are 2016–2020 estimated annual means, accounting for undetected mortality and serious injury.

⁶ As noted in the draft 2023 SAR (89 FR 5495, January 29, 2024), abundance estimates may include sightings of the coastal form.

⁷ There are two morphologically and genetically distinct forms of common bottlenose dolphin (Duffield *et al.*, 1983; Mead and Potter, 1995; Rosel *et al.*, 2009) described as the coastal and offshore forms in the western North Atlantic (Hersh and Duffield, 1990; Mead and Potter, 1995; Curry and Smith, 1997; Rosel *et al.*, 2009). The two morphotypes are genetically distinct based upon both mitochondrial and nuclear markers (Hoelzel *et al.*, 1998; Rosel *et al.*, 2009). The genetic and morphological differences recently led to the coastal form being described as a new species, *Tursiops erebennus* (Costa *et al.*, 2022; 89 FR 5495, January 29, 2024). Population estimates are based upon recent surveys in 2021.

⁸ US Wind did not request take of these species; however, their exposure analysis demonstrates there is potential for harassment. Although these species are rare in the project area, NMFS would authorize a small amount of Level B harassment in the case of potential presence during pile driving.

⁹ NMFS' stock abundance estimate (and associated PBR value) applies to the U.S. population only. Total stock abundance (including animals in Canada) is approximately 451,431. The annual M/SI value given is for the total stock.

Of the marine mammal species and/or stocks with geographic ranges that include the western North Atlantic OCS (table 3–1 in US Wind incidental take authorization (ITA) application), 19 are not expected to be present or are considered rare or unexpected in the project area based on sighting and distribution data; they are, therefore, not discussed further beyond the

explanation provided here. Specifically, the following cetacean species are known to occur off of Maryland but are not expected to occur in the project area due to the location of preferred habitat outside the Lease Area and ECCs, based on the best available information, and therefore US Wind did not request, and NMFS is not authorizing take, of these species: Blue whale (*Balaenoptera*

musculus), Cuvier's beaked whale (*Ziphius cavirostris*), four species of Mesoplodont beaked whales (*Mesoplodon densirostris*, *M. europaeus*, *M. mirus*, and *M. bidens*), Atlantic white-sided dolphin (*Lagenorhynchus acutus*), Clymene dolphin (*Stenella clymene*), dwarf sperm whale (*Kogia sima*), false killer whale (*Pseudorca crassidens*), Fraser's dolphin

(*Lagenodelphis hosei*), melon-headed whale (*Peponocephala electra*), northern bottlenose whale (*Hyperoodon ampullatus*), pygmy killer whale (*Feresa attenuata*), pygmy sperm whale (*Kogia breviceps*), sperm whale (*Physeter macrocephalus*), spinner dolphin (*Stenella longirostris*), and white-beaked dolphin (*Lagenorhynchus albirostris*). Two species of phocid pinnipeds are also uncommon in the project area, including: harp seals (*Pagophilus groenlandica*) and hooded seals (*Cystophora cristata*). However, harp seals are known to strand in coastal Maryland. Therefore, the LOA, if issued, would authorize take of harp seals.

In addition to the species listed in table 2, the Florida manatee (*Trichechus manatus*; a sub-species of the West Indian manatee) has been previously documented as an occasional visitor to the Mid-Atlantic region during summer months (U.S. Fish and Wildlife Service (USFWS), 2019). However, as manatees are managed solely under the jurisdiction of the U.S. FWS and are considered rare or unexpected in the Project Area, they are not considered or discussed further in this document.

A detailed description of the species likely to be affected by the Project, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the proposed rule (89 FR 504, January 4, 2024). Other than adjustments to population statistics (e.g., North Atlantic right whale population abundance) and UME updates, we are not aware of any changes in the status of the species and stocks listed in table 2; therefore, detailed descriptions are not provided here. Please refer to the proposed rule for these descriptions (89 FR 504, January 4, 2024). Please also refer to NMFS' website (<https://www.fisheries.noaa.gov/find-species>) for generalized species accounts.

Since the publication of the proposed rule, the following updates have occurred to the below species in regards to general information or their active UMEs.

North Atlantic Right Whale

In January 2024, NMFS released its draft 2023 SARs, (89 FR 5495, January 29, 2024) which updated the population estimate (N_{best}) of North Atlantic right whales to 340 individuals (an increase from the final 2022 SARs ($n=338$); the annual M/SI value dropped from the final 2022 SAR of 31.2 to 27.2 in the draft 2023 SAR. Beginning in the 2022 SARs, the M/SI for North Atlantic right

whale included the addition of estimated undetected mortality and serious injury, which had not been previously included in the SAR. The current population estimate is equal to the North Atlantic Right Whale Consortium's 2022 Annual Report Card, which identifies the population estimate as 340 individuals (Pettis *et al.*, 2023).

As described in the proposed rule, elevated North Atlantic right whale mortalities have occurred since June 7, 2017, along the U.S. and Canadian coast, with the leading category for the cause of death for this UME determined to be "human interaction," specifically from entanglements or vessel strikes. Since publication of the proposed rule, the number of animals considered part of the UME has increased. As of September 3, 2024, there have been 40 confirmed mortalities (dead, stranded, or floaters), 1 pending mortality, and 36 seriously injured free-swimming whales for a total of 77 whales. The UME also considers animals with sublethal injury or illness (called "morbidity"; $n=65$) bringing the total number of whales in the UME to 142. More information about the North Atlantic right whale UME is available online at: <https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2024-north-atlantic-right-whale-unusual-mortality-event>.

Humpback Whale

Since January 2016, elevated humpback whale mortalities have occurred along the Atlantic coast from Maine to Florida. This event was declared a UME in April 2017. Partial or full necropsy examinations have been conducted on approximately half of the known cases. Since publication of the proposed rule, the number of animals considered part of the UME has increased to 227 total mortalities (as of September 3, 2024). More information is available at: <https://www.fisheries.noaa.gov/national/marine-life-distress/2016-2024-humpback-whale-unusual-mortality-event-along-atlantic-coast>.

Since December 1, 2022, the number of humpback strandings along the mid-Atlantic coast, from North Carolina to New York, has been elevated. In some cases, the cause of death is not yet known; in others, vessel strike has been deemed the cause of death. As the humpback whale population has grown, they are seen more often in the Mid-Atlantic. These whales may be following their prey (small fish) which were reportedly close to shore in the 2022–2023 winter. Changing distributions of prey impact larger marine species that depend on them, and result in changing distribution of

whales and other marine life. These prey also attract fish that are targeted by recreational and commercial fishermen, which increases the number of boats and amount of fishing gear in these areas. This nearshore movement increases the potential for anthropogenic interactions, particularly as the increased presence of whales in areas traveled by boats of all sizes increases the risk of vessel strikes.

Minke Whale

Since January 2017, a UME has been declared based on elevated minke whale mortalities detected along the Atlantic coast from Maine through South Carolina. As of September 3, 2024, a total of 174 minke whales have stranded during this UME. Full or partial necropsy examinations were conducted on more than 60 percent of the whales. Preliminary findings have shown evidence of human interactions or infectious disease in several of the whales, but these findings are not consistent across all of the whales examined, so more research is needed. More information is available at: <https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2024-minke-whale-unusual-mortality-event-along-atlantic-coast>.

Phocid Seals

Since June 2022, elevated numbers of harbor seal and gray seal mortalities have occurred across the southern and central coast of Maine. This event was declared a UME in June 2022 and lasted through July 2022. The UME Investigative Team reviewed necropsy, histopathology, and diagnostic findings. They determined the UME was attributed to spillover events of the highly pathogenic avian influenza H5N1 virus from infected wild birds to harbor and gray seals. An ongoing HPAI H5N1 global outbreak in domestic and wild birds and wild mammals began in 2021. Live seals showed signs of respiratory and neurological disease including nasal and ocular discharge, coughing, unresponsiveness, and seizures. Eighteen percent of the stranded seals (33 out of 180) were tested for avian influenza via polymerase-chain-reaction. A subset of seals were positive for HPAI H5N1 with preliminary findings confirmed by the U.S. Department of Agriculture's National Veterinary Services Laboratories. Of the 33 seals tested during the UME period 19 (58 percent) were positive for H5N1 (17 harbor seals; 2 gray seals) and 14 (42 percent) tested negative. Twelve H5N1 positive seals had histopathology conducted; 11 of those seals had lesions (primarily respiratory and/or

neurologic) suspected or consistent with avian influenza infection. Sequencing of the H5N1 virus detected in seals suggests the seals were infected from spillover events from infected wild birds to these seals. While the UME was not occurring in the area of the Project, the populations affected by the UME were the same as those potentially affected by the Project. Information on this UME is available online at: <https://www.fisheries.noaa.gov/national/marine-life-distress/active-and-closed-unusual-mortality-events>.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals

underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (e.g., Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms

derived using auditory evoked potential techniques, anatomical modeling, and other data. Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65-dB threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in table 4.

TABLE 4—MARINE MAMMAL HEARING GROUPS [NMFS, 2018]

Hearing group	Generalized hearing range *
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz.
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz.
High-frequency (HF) cetaceans (true porpoises, Kogia, river dolphins, <i>cephalorhynchid</i> , <i>Lagenorhynchus cruciger</i> & <i>L. australis</i>)	275 Hz to 160 kHz.
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz.

* Represents the generalized hearing range for the entire group as a composite (i.e., all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65-dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.*, 2007) and PW pinniped (approximation).

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

Exposure to underwater noise from the Project's specified activities have the potential to result in Level A harassment or Level B harassment of marine mammals in the specified geographic region, but no serious injury or mortality. The proposed rule (89 FR 504, January 4, 2024) included a discussion of the effects of anthropogenic noise on marine mammals and the potential effects of underwater noise from the Project's specified activities on marine mammals and their habitat. While some new literature regarding marine mammal distribution and habitat use has been published since publication of the proposed rule (e.g., BOEM *et al.*, 2024; Holdman *et al.*, 2023; Pirotta *et al.*, 2024; Roberts *et al.*, 2024; Thorne and Wiley, 2024), there is no new information that NMFS is aware of that changes the analysis in the proposed rule. We provide a summary of these papers below.

The recently released BOEM and NOAA Fisheries North Atlantic Right Whale Strategy (BOEM *et al.*, 2024) identified actions related to mitigation and decision-support tools, research and

monitoring, and collaboration, communication, and outreach to minimize risk and impacts to North Atlantic right whales. The identified actions would also allow for coordinated and efficient collaborations between Federal agencies and partners, collection and application of the best available scientific data, and implementation of effective mitigation measures. The Strategy also describes potential actions for further development as well.

Pirotta *et al.* (2024) incorporated data and analysis of North Atlantic right whale length, compiled by the North Atlantic Right Whale Consortium, to investigate whether the smaller mean asymptotic length currently documented for North Atlantic right whales is associated with lower reproductive output. North Atlantic right whale mean asymptotic length (Stewart *et al.*, 2021) and female calving probability (Pirotta *et al.*, 2023) have been in decline for decades. Pirotta *et al.* (2024) expanded upon the conducted by Stewart *et al.* (2022) and quantified how length contributes to calving probability, while taking into account variation due to individual health of whales. The finding that smaller mean

asymptotic length contributes to lower calving probability for North Atlantic right whales provides a greater understanding into drivers for decreasing reproductive output for this species.

In 2022, the Duke University Marine Geospatial Ecology Laboratory provided updated habitat-based marine mammal density models for the U.S. Atlantic (Roberts *et al.*, 2016; Roberts *et al.*, 2023). The proposed rule incorporated these density models into methodology for estimating take from foundation installation and HRG surveys (89 FR 504, January 4, 2024). Recently, North Atlantic right whale density model results were evaluated using independently collected passive acoustic monitoring (PAM data) (Roberts *et al.*, 2024). Positive correlations between North Atlantic right whale densities and acoustic detection rates indicated concurrence between visual and acoustic observations of North Atlantic right whales. Results of this study also further quantify the North Atlantic right whale distribution shifts that occurred in 2010.

Moreover, new data also supports our inclusion of certain mitigation measures in the proposed and this final rule. For

example, Crowe *et al.* (2023) discussed the use and importance of real-time data for detecting North Atlantic right whales. The shift in North Atlantic right whale habitat use motivated the integration of additional ways to detect the presence of North Atlantic right whales and passive acoustic detections of right whale vocalizations reported in near real-time became an increasingly important tool to supplement visual sightings. The proposed rule did include real-time and daily awareness measures and sighting communication protocols, NMFS evaluated these measures and added details for clarity or updated the reporting mechanisms, such as in the case of sighting an injured North Atlantic right whale. Davis *et al.* (2023) analyzed North Atlantic right whale individual upcalls from 2 years of acoustic recordings in southern New England which showed that North Atlantic right whales were detected at least 1 day every week throughout both years, with highest North Atlantic right whale presence from October to April. Within southern New England (SNE), on average, 95 percent of the time North Atlantic right whales persisted for 10 days, and recurred again within 11 days. An evaluation of the time period over which it is most effective to monitor prior to commencing pile driving activities showed that with 1 hour of pre-construction monitoring there was only 4 percent likelihood of hearing a North Atlantic right whale, compared to 74 percent at 18 h. Therefore, monitoring for at least 24 hours prior to activity will increase the likelihood of detecting an up-calling North Atlantic right whale.

Thorne and Wiley (2024) recently reviewed spatiotemporal patterns of strandings, mortalities, and serious injuries of humpback whales along the U.S. east coast from 2016–2022 and found vessel strikes to be the major driver in the increase of humpback whale strandings, mortalities, and serious injury. Based upon the spatiotemporal analysis, no evidence was found that offshore wind development played a role in the increased number of strandings over time. In fact, the potential for vessel strike increased during the course of the study due to increased vessel traffic in new foraging areas, the increased presence of juvenile humpback whales, and humpback whale foraging in shallow areas that overlap with vessel traffic.

Similar to the discussion presented in the proposed rule, the BiOp stated it is likely the Project will produce a wind wake from operation of the turbines and that the foundations themselves will

lead to disruptions in local conditions. The scale of these effects is expected to range from hundreds of meters and up to 1 km from each foundation and the changes in conditions may alter the distribution of nutrients, primary production, and plankton (Floeter *et al.*, 2017; van Berkel *et al.*, 2020). However, the BiOp concluded it is not expected that the impacts to oceanic conditions resulting from the Project will be large enough to affect regional conditions that could influence the distribution of prey or conditions that aggregate prey in the broader Mid-Atlantic Bight region or within or around the Maryland Wind WDA in a way that would have adverse effects on ESA-listed species. Therefore, NMFS expects any alteration of the biomass of plankton in the region, and therefore, the total food supply, to be so small that adverse effects on ESA-listed species are extremely unlikely to occur.

Overall, there is no new scientific information regarding the general anticipated effects of OSW construction on marine mammals and their habitat that was not discussed in the proposed rule. The information and analysis regarding the potential effects on marine mammals and their habitat has not changed and is adopted here by reference (see 89 FR 504, January 4, 2024).

Globally, there are more than 341,000 operating WTGs (Global Wind Energy Council). Turbine failures are known to occur but are considered rare events (Katsaprakakis *et al.*, 2021, DOE, 2024a). For example, fewer than 40 incidents were identified in the modern fleet of more than 40,000 onshore turbines installed in the United States as of 2014 (DOE, 2024b). In 2022, the total global capacity of offshore wind reached 59,009 MW from 292 operating projects and over 11,900 operating wind turbines in 2022 (DOE, 2023), and a review of the relevant literature and media reports indicate blade failure among this cohort of turbines continues to be rare, consistent with industry performance in onshore wind turbines. On July 13, 2024, however, a blade on one of the WTGs at Vineyard Wind 1, a project located off of Martha's Vineyard and Nantucket, was damaged during the "warm up" phase of operations, causing a portion of the blade, primarily composed of fiberglass, to fall into the water. In cooperation with Vineyard Wind 1, GE Vernova, the blade manufacturer, initiated debris recovery efforts and an investigation. Following this blade failure incident, the Bureau of Safety and Environmental Enforcement (BSEE), Department of Interior, issued a Suspension Order on July 17, 2024 (<https://www.bsee.gov/newsroom/latest->

[news/statements-and-releases/press-releases/bsee-statement-on-vineyard-wind](https://www.bsee.gov/newsroom/latest-news/statements-and-releases/press-releases/bsee-statement-on-vineyard-wind)) and an additional Order for clarification on July 26, 2024 (<https://www.bsee.gov/newsroom/latest-news/statements-and-releases/press-releases/bsee-issues-new-order-to-vineyard-wind>), which suspends power production and any further wind turbine generator construction until the suspension is lifted.

As noted above, wind turbine failure is considered rare, and NMFS still considers the likelihood that blade failure would occur pursuant to US Wind's specified activity during the effective period of the ITA so low as to be discountable. Furthermore, GE Vernova's quality assurance program will complete thorough inspections on the remaining blades to be installed to ensure additional blade malfunction incidents do not occur. US Wind did not request, NMFS does not anticipate, and NMFS has not authorized, take of marine mammals incidental to a turbine blade failure and, therefore the topic is not discussed further.

Estimated Take

This section provides an estimate of the number of incidental takes that may be authorized through this rule, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination. The analysis related to take incidental to HRG surveys and foundation installation is unchanged since the proposed rule.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment (as well as impulse metric (Pascal-second) and peak sound pressure level thresholds above which marine mammals may incur non-auditory injury from underwater explosive detonations); (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available. Below, we describe the factors considered here in more detail and present the take estimates.

Marine Mammal Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the

received level of underwater sound above which exposed marine mammals are likely to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment). Thresholds have also been developed identifying the received level of in-air sound above which exposed pinnipeds would likely be behaviorally harassed. A summary of NMFS' 2018 thresholds can be found at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>.

Level B harassment—Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source or exposure context (e.g., frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (e.g., other noises in the area) and the state of the receiving animals (e.g., hearing, motivation, experience, demography, life stage, depth), and can be difficult to predict (e.g., Southall *et al.*, 2007, 2021; Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and

measurable for most activities, NMFS typically uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when exposed to underwater anthropogenic noise above root-mean-squared pressure received levels (RMS SPL) of 120 dB (re 1 µPa) for continuous (e.g., vibratory pile driving, drilling) and above RMS SPL 160 dB re 1 µPa for non-explosive impulsive (e.g., seismic airguns) or intermittent (e.g., scientific sonar) sources (table 4). Generally speaking, Level B harassment take estimates based on these behavioral harassment thresholds are expected to include any likely takes by temporary threshold shift (TTS) as, in most cases, the likelihood of TTS occurs at distances from the source less than those at which behavioral harassment is likely. TTS of a sufficient degree can manifest as behavioral harassment, as reduced hearing sensitivity and the potential reduced opportunities to detect important signals (e.g., conspecific communication, predators, prey) may result in changes in behavior patterns that would not otherwise occur.

US Wind's construction activities include the use of intermittent (e.g., impact pile driving and HRG acoustic sources); therefore, the 160 dB re 1 µPa (RMS) threshold is applicable.

Level A harassment—NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0; Technical Guidance, 2018) identifies dual criteria to assess auditory injury constituting Level A harassment to five different marine mammal groups based on hearing sensitivity as a result of exposure to noise from two different types of sources (i.e., impulsive or non-impulsive sources). As dual metrics, NMFS considers onset of PTS constituting Level A harassment to have occurred when either one of the two metrics is exceeded (i.e., metric resulting in the largest isopleth). The Project includes the use of impulsive and non-impulsive sources.

The 2018 thresholds are provided in table 5 below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS' 2018 Technical Guidance, which may be accessed at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>.

TABLE 5—ONSET OF PTS
(NMFS, 2018)

Hearing group	PTS onset thresholds* (received level)	
	Impulsive	Non-impulsive
Low-frequency (LF) cetaceans	<i>Cell 1:</i> $L_{p,0-pk,flat}$: 219 dB; $L_{E,p,LF,24h}$: 183 dB	<i>Cell 2:</i> $L_{E,p,LF,24h}$: 199 dB.
Mid-frequency (MF) cetaceans	<i>Cell 3:</i> $L_{p,0-pk,flat}$: 230 dB; $L_{E,p,MF,24h}$: 185 dB	<i>Cell 4:</i> $L_{E,p,MF,24h}$: 198 dB.
High-frequency (HF) cetaceans	<i>Cell 5:</i> $L_{p,0-pk,flat}$: 202 dB; $L_{E,p,HF,24h}$: 155 dB	<i>Cell 6:</i> $L_{E,p,HF,24h}$: 173 dB.
Phocid pinnipeds (PW) (Underwater)	<i>Cell 7:</i> $L_{p,0-pk,flat}$: 218 dB; $L_{E,p,PW,24h}$: 185 dB	<i>Cell 8:</i> $L_{E,p,PW,24h}$: 201 dB.
Otariid pinnipeds (OW) (Underwater)	<i>Cell 9:</i> $L_{p,0-pk,flat}$: 232 dB; $L_{E,p,OW,24h}$: 203 dB	<i>Cell 10:</i> $L_{E,p,OW,24h}$: 219 dB.

* Dual metric thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds are recommended for consideration.

Note: Peak sound pressure level ($L_{p,0-pk}$) has a reference value of 1 µPa, and weighted cumulative sound exposure level ($L_{E,p}$) has a reference value of $1\mu Pa^2s$. In this table, thresholds are abbreviated to be more reflective of International Organization for Standardization standards (ISO, 2017). The subscript "flat" is being included to indicate peak sound pressure are flat weighted or unweighted within the generalized hearing range of marine mammals (i.e., 7 Hz to 160 kHz). The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The weighted cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these thresholds will be exceeded.

Take That May Be Authorized

In the proposed rule, we discussed the marine mammal density and occurrence information, acoustic modeling, and take estimation methodologies and results for each of US Wind's specified activities and all marine mammal species and stocks. All of this information presented in the proposed rule, including multiple tables

(e.g., densities, acoustic ranges, source characteristics) remains accurate and unchanged and is not reproduced here. Below, tables 6 and 7 identify the maximum annual allowable take and the maximum total allowable take across the 5-year effective period of the rule.

As described in the proposed rule (89 FR 504, January 4, 2024), NMFS used

the best available science and robust models to consider the interaction of marine mammal movement, the environment, and the Project activities, in the context of NMFS' acoustic thresholds, to project the maximum number of takes that are reasonably expected to occur, by Level A harassment and Level B harassment. However, NMFS has also acknowledged

the uncertainty inherent in certain input values (*e.g.*, source levels and spectra) and environmental variability present in real-life physical and biological systems. The LOA would specify maximum annual and 5 year takes that may not be

exceeded, by Level A and Level B harassment, but would not specify the number of allowable takes by activity type, thus allowing for flexibility should the number of takes from a specific activity type exceed the number

modeled for the specific activity type, provided the manner and impacts of those takes remain within those considered within the analysis and the total takes remain below the annual maximum and 5-year totals.

TABLE 6—MAXIMUM LEVEL A HARASSMENT AND LEVEL B HARASSMENT TAKES FOR ALL ACTIVITIES THAT MAY BE AUTHORIZED DURING THE CONSTRUCTION OF THE PROJECT AND OVER THE COURSE OF THE FIVE YEARS COVERED BY THE RULE ¹

Marine mammal species	Total take by Level A harassment that may be authorized	Total take by Level B harassment that may be authorized
North Atlantic right whale ²	0	10
Fin whale ²	6	35
Humpback whale	6	30
Minke whale	9	58
Sei whale ²	3	3
Killer whale	0	9
Atlantic spotted dolphin	0	168
Coastal bottlenose dolphin	0	2,165
Offshore bottlenose dolphin	0	2,755
Bottlenose dolphin ³	0	258
Common dolphin	0	488
Long-finned pilot whale	0	48
Short-finned pilot whale	0	33
Pantropical spotted dolphin	0	15
Risso's dolphin	0	70
Rough-toothed dolphin	0	18
Striped dolphin	0	138
Harbor porpoise	6	68
Gray seal ⁴	0	496
Harbor seal ⁴		
Harp seal ⁴		

¹ The final rule and LOA would be effective from January 1, 2025 through December 31, 2029, however, US Wind has not planned activities to occur in 2028 or 2029. As described in table 2, NMFS recognizes the potential for activity schedules to shift such that they occur during different timeframes within the five year effective period of the rule, including the potential for activities to occur in 2028 and 2029.

² Listed as Endangered under the ESA.

³ The total take over 5 years represented here accounts for HRG surveys wherein the take may occur to either the Northern migratory coastal stock and/or the offshore stock of bottlenose dolphins.

⁴ Take that may be authorized includes harbor seals, gray seals, and harp seals.

To inform both the negligible impact analysis and the small numbers determination, NMFS also (in addition to the five-year total) assesses the maximum number of takes of marine mammals that could occur within any given year. For each species or stock, we consider the maximum number of Level A harassment takes that could occur and may be authorized in any one year, the maximum number of Level B harassment takes that could occur and may be authorized in any one year, and the sum of those two annual maxima to yield the highest number of total takes that could occur in any year (table 7). Table 7 also indicates the number of takes authorized relative to the abundance of each stock. The takes enumerated here represent daily instances of take, not necessarily individual marine mammals taken. One take represents a day in which an

animal was exposed to noise above the associated harassment threshold at least once. Some takes represent a brief exposure above a threshold, while in some cases takes could represent a longer, or repeated, exposure of one individual animal above a threshold within a 24-hour period. Whether or not every take assigned to a species represents a different individual depends on the daily and seasonal movement patterns of the species in the area. For example, activity areas with continuous activities (all or nearly every day) overlapping known feeding areas (where animals are known to remain for days or weeks on end) or areas where species with small home ranges live (*e.g.*, some pinnipeds) are more likely to result in repeated takes to some individuals. Alternatively, activities that are not occurring on consecutive days for the duration of the Project (*e.g.*,

foundation installation) or occurring in an area where animals are migratory and not expected to remain for multiple days, represent circumstances where repeat takes of the same individuals are less likely. For example, 100 takes could represent 100 individuals each taken on one day within the year, or it could represent 5 individuals each taken on 20 days within the year. The combination of number of individuals each taken and number of days on which take would occur would depend upon the activity, the presence of biologically important areas in the project area, and the movement patterns of the marine mammal species exposed. Where information to better contextualize the enumerated takes for a given species is available, it is discussed in the Negligible Impact Analysis and Determination and/or Small Numbers sections, as appropriate.

TABLE 7—MAXIMUM NUMBER OF TAKES BY LEVEL A HARASSMENT AND LEVEL B HARASSMENT THAT MAY BE AUTHORIZED IN ANY ONE YEAR OF THE PROJECT RELATIVE TO STOCK POPULATION SIZE ¹

Marine mammal species	NMFS stock abundance	Maximum annual Level A harassment	Maximum annual Level B harassment	Maximum annual take	Maximum take (instances) as a percentage of stock abundance) ^{1 2}
North Atlantic right whale ^{3 4}	338	0	4	4	1.18
Fin whale ^{3 4}	6,802	2	18	20	0.29
Humpback whale ⁴	1,396	2	16	18	1.29
Minke whale	21,968	6	41	47	0.21
Sei whale ^{3 4}	6,292	1	1	2	0.03
Killer whale ⁴	UNK	0	3	3	UNK
Atlantic spotted dolphin ⁴	39,921	0	69	69	0.17
Coastal bottlenose dolphin ⁵	6,639	0	1,591	1,591	24.0
Offshore bottlenose dolphin ⁵	62,851	0	1,768	1,768	2.81
Common dolphin	172,974	0	298	298	0.17
Long-finned pilot whale ⁴	39,215	0	16	16	0.04
Short-finned pilot whale ⁴	28,924	0	11	11	0.04
Pantropical spotted dolphin ⁴	6,593	0	5	5	0.08
Risso's dolphin ⁴	35,215	0	26	26	0.07
Rough-toothed dolphin ⁴	136	0	6	6	4.41
Striped dolphin ⁴	67,036	0	46	46	0.07
Harbor porpoise ⁴	95,543	3	39	42	0.04
Gray seal ⁶	27,300	0	341	341	1.25
Harbor seal ⁶	61,336	0.56
Harp seal ⁶	7.6M	0.004

¹ Year 2 (2026) represents the most overall impactful year.

² The values in this column represent the assumption that each take that may be authorized would occur to a unique individual. Given the scope of planned work, this is highly unlikely for species common to the project area (e.g., North Atlantic right whales, humpback whales) such that the actual percentage of the population taken is less than the percentages identified here.

³ Listed as Endangered under the ESA.

⁴ Take that may be authorized is based on average group size.

⁵ The amount of take identified includes the maximum amount of take that could occur from impact pile driving in any given year plus the maximum amount of take from HRG surveys in any given year, assuming all take from HRG surveys is allocated to both bottlenose dolphin stocks.

⁶ Assumes 100 percent of the take by Level B harassment is from either the gray seal stock, harbor seal stock, or harp seal stock.

Mitigation

As noted in the Changes from the Proposed to Final Rule section, NMFS has added new mitigation requirements and clarified a few others. These changes are described in detail in the sections below. Besides these changes, the required measures remain the same as those described in the proposed rule. However, NMFS has also re-organized and simplified the section to avoid full duplication of the specific requirements that are fully described in the regulatory text.

In order to promulgate a rulemaking under section 101(a)(5)(A) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable adverse impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS' regulations require applicants for ITAs to include information about the availability and feasibility (e.g., economic and technological) of equipment, methods, and manner of

conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (e.g., likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (i.e., the probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (i.e., the probability if implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider factors such as cost, impact on operations, and, in the case

of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

The mitigation strategies described below are consistent with those required and successfully implemented under previous ITAs issued in association with in-water construction activities (e.g., soft-start, establishing shutdown zones). Additional measures have also been incorporated to account for the fact that the construction activities would occur offshore. Modeling was performed to estimate harassment zones, which were used to inform mitigation measures for the Project's activities to minimize Level A harassment and Level B harassment to the extent practicable, while providing estimates of the areas within which Level B harassment might occur.

Generally speaking, the mitigation measures considered and required here fall into three categories: temporal (i.e., seasonal and daily) and spatial work restrictions, real-time measures (e.g., shutdown, clearance, and vessel strike avoidance), and noise attenuation/reduction measures. Temporal and spatial work restrictions are designed to

avoid or minimize operations when marine mammals are concentrated or engaged in behaviors that make them more susceptible or make impacts more likely, in order to reduce both the number and severity of potential takes, and are effective in reducing both chronic (longer-term) and acute effects. Real-time measures, such as implementation of shutdown and clearance zones, as well as vessel strike avoidance measures, are intended to reduce the probability or severity of harassment by taking steps in real time once a higher-risk scenario is identified (e.g., once animals are detected within an impact zone). Noise attenuation measures such as bubble curtains are intended to reduce the noise at the source, which reduces both acute impacts, as well as the contribution to aggregate and cumulative noise that may result in longer term chronic impacts.

Below, we briefly describe the required training, coordination, and vessel strike avoidance measures that apply to all activity types, and in the following subsections we describe the measures that apply specifically to foundation installation and HRG surveys. Details on specific requirements can be found in 50 CFR part 217, subpart II, set out at the end of this rule.

Training and Coordination

NMFS requires all US Wind employees and contractors conducting activities on the water, including but not limited to, all vessel captains and crew to be trained in marine mammal detection and identification, communication protocols, and all required measures to minimize impacts on marine mammals and support US Wind's compliance with the LOA, if issued. Additionally, all relevant personnel and the marine mammal species monitoring team(s) are required to participate in joint, onboard briefings prior to the beginning of project activities. The briefing must be repeated whenever new relevant personnel (e.g., new PSOs, construction contractors, relevant crew) join the Project before work commences. During this training, US Wind is required to instruct all project personnel regarding the authority of the marine mammal monitoring team(s). For example, the HRG acoustic equipment operator, pile driving personnel, etc., is required to immediately comply with any call for a delay or shutdown by the Lead PSO. Any disagreement between the Lead PSO and the Project personnel must only be discussed after delay or shutdown has occurred. In particular, all captains and vessel crew must be

trained in marine mammal detection and vessel strike avoidance measures to ensure marine mammals are not struck by any Project or Project-related vessel.

Prior to the start of in-water construction activities, vessel operators and crews will receive training about marine mammals and other protected species known or with the potential to occur in the project area, making observations in all weather conditions, and vessel strike avoidance measures. In addition, training will include information and resources available regarding applicable Federal laws and regulations for protected species. US Wind will provide documentation of training to NMFS. Since the proposed rule, NMFS has added requirements for a description of the training program to be provided to NMFS at least 60 days prior to the initial training before in-water activities begin and for confirmation of all required training to be documented on a training course log sheet and reported to NMFS Office of Protected Resources prior to initiating Project activities. These measures were added in response to several commenters' concerns regarding strengthening mitigation and monitoring measures.

North Atlantic Right Whale Awareness Monitoring

US Wind must use available sources of information on North Atlantic right whale presence, including daily monitoring of the Right Whale Sightings Advisory System, monitoring of Coast Guard VHF Channel 16 throughout each day to receive notifications of any sightings, and information associated with any regulatory management actions (e.g., establishment of a zone identifying the need to reduce vessel speeds). Maintaining daily awareness and coordination affords increased protection of North Atlantic right whales by understanding North Atlantic right whale presence in the area through ongoing visual and PAM efforts and opportunities (outside of US Wind's efforts), and allows for planning of construction activities, when practicable, to minimize potential impacts on North Atlantic right whales. The vessel strike avoidance measures apply to all vessels associated with the Project within U.S. waters and on the high seas.

Vessel Strike Avoidance Measures

Both the proposed and this final rule contain numerous vessel strike avoidance measures that reduce the risk that a vessel and marine mammal could collide. These measures must be followed unless doing so would create

safety risks as described in the regulatory text. While the likelihood of a vessel strike is generally low, they are one of the most common ways that marine mammals are seriously injured or killed by human activities. Therefore, enhanced mitigation and monitoring measures are required to further avoid vessel strikes to the extent practicable. While many of these measures are proactive, intended to avoid the heavy use of vessels during times when marine mammals of particular concern may be in the area, several are reactive and occur when a marine mammal is sighted by Project personnel. The mitigation requirements are described generally here and in detail in the regulatory text at the end of this final rule (50 CFR 217.344(b)). US Wind will be required to comply with these measures, except under circumstances when doing so would create an imminent and serious threat to a person or vessel, or to the extent that a vessel is unable to maneuver and, because of the inability to maneuver, the vessel cannot comply.

While underway, US Wind is required to monitor for and maintain a safe distance from marine mammals, and operate vessels in a manner that reduces the potential for vessel strike. Regardless of the vessel's size, all vessel operators, crews, and dedicated visual observers (i.e., PSO or trained crew member) must maintain a vigilant watch for all marine mammals and slow down, stop their vessel, or alter course as appropriate to avoid striking any marine mammal. The dedicated visual observer, equipped with suitable monitoring technology (e.g., binoculars, night vision devices), must be located at an appropriate vantage point for ensuring vessels are maintaining required vessel separation distances from marine mammals (e.g., 500 m from North Atlantic right whales).

For all Project-related vessels (regardless of size), the vessel is required to immediately reduce speeds to 10 kn (11.5 mph) or less if any large whale, or large assemblage of non-delphinid cetaceans is observed within 500 m of the vessel. Additionally, all Project vessels, regardless of size, must maintain a 100-m minimum separation zone from sperm whales and non-North Atlantic right whale baleen species. Vessels are also required to keep a minimum separation distance of 50 m from all delphinid cetaceans and pinnipeds, with an exception made for those species that approach the vessel (i.e., bow-riding dolphins). If any of these non-North Atlantic right whale marine mammals are sighted, the underway vessel must shift its engine to neutral and the engines must not be

engaged until the animal(s) have been observed to be outside of the vessel's path and beyond 100 m (for sperm whales and non-North Atlantic right whale large whales) or 50 m (for delphinids and pinnipeds).

TABLE 8—VESSEL STRIKE AVOIDANCE SEPARATION ZONES

Marine mammal species	Vessel separation zone (m)
North Atlantic right whale	500
Other ESA-listed species and large whales	100
Other marine mammals ¹	50

¹ With the exception of seals and delphinid(s) from the genera *Delphinus*, *Lagenorhynchus*, *Stenella* or *Tursiops*, as described below.

All of the Project-related vessels are required to comply with the measures within this rulemaking for operating vessels around North Atlantic right whales and other marine mammals, as well as any existing NMFS vessel speed restrictions for North Atlantic right whales. When NMFS vessel speed restrictions are not in effect and a vessel is traveling at greater than 10 kn (11.5 mph), in addition to the required dedicated visual observer, US Wind is required to monitor the transit corridor in real-time with PAM prior to and during transits. To maintain awareness of North Atlantic right whale presence in the project area, vessel operators, crew members, and the marine mammal monitoring team will monitor U.S. Coast Guard VHF Channel 16, WhaleAlert, the Right Whale Sighting Advisory System (RWSAS), and the PAM system. Any North Atlantic right whale or large whale detection will be immediately communicated to PSOs, PAM operators, and all vessel captains. All vessels will be equipped with an Automatic Information System (AIS) and US Wind must report all Maritime Mobile Service Identity (MMSI) numbers to NMFS Office of Protected Resources prior to initiating in-water activities. US Wind will submit a Marine Mammal Vessel Strike Avoidance Plan for NMFS approval at least 180 days prior to commencement of vessel use.

Compliance with these measures will reduce the likelihood of vessel strike to the extent practicable. These measures increase awareness of marine mammals in the vicinity of Project vessels and require Project vessels to reduce speed when marine mammals are detected (by PSOs, PAM, and/or through another source, e.g., RWSAS) and maintain separation distances when marine mammals are encountered. While visual monitoring is useful, reducing vessel speed is one of the most effective, feasible options available to reduce the likelihood of, and effects from, a vessel strike. Numerous studies have indicated that slowing the speed of vessels reduces the risk of lethal vessel collisions, particularly in areas where

right whales are abundant and vessel traffic is common and otherwise traveling at high speeds (Vanderlaan and Taggart, 2007; Conn and Silber, 2013; Van der Hoop *et al.*, 2014; Martin *et al.*, 2015; Crum *et al.*, 2019).

Given the inherent low probability of vessel strike, combined with the vessel strike avoidance measures included herein, NMFS considers the potential for vessel strike to be unlikely and would not allow take from this activity under this final rule.

Seasonal and Daily Restrictions

Temporal and spatial restrictions in places where marine mammals are concentrated, engaged in biologically important behaviors, and/or present in sensitive life stages are effective measures for reducing the magnitude and severity of human impacts. The temporal restrictions required here are built around the protection of North Atlantic right whales. Based upon the best scientific information available (Roberts *et al.*, 2023), the highest densities of North Atlantic right whales in the project area are expected during the months of January through April, with an increase in density starting in December. However, North Atlantic right whales may be present in the project area throughout the year.

NMFS is requiring seasonal work restrictions to minimize the risk of noise exposure to North Atlantic right whales incidental to certain specified activities to the extent practicable. These seasonal work restrictions are expected to greatly reduce the number of takes of North Atlantic right whales. These seasonal restrictions also afford protection to other marine mammals that are known to use the project area with greater frequency during winter months, including other baleen whales. As described previously, no impact pile driving activities may occur December 1 through April 30.

No more than one foundation monopile, four 3-m pin piles for jacket foundations, or three 1.8-m pin piles for the Met tower will be installed per day. Monopiles must be no larger than 11-m

in diameter and pin piles must be no larger than 3-m in diameter. For all monopiles and pin piles, the minimum amount of hammer energy necessary to effectively and safely install and maintain the integrity of the piles must be used. No more than one pile may be installed at a given time (*i.e.*, concurrent/simultaneous pile driving and drilling may not occur).

US Wind would not initiate pile driving earlier than 1 hour prior to civil sunrise or later than 1.5 hours prior to civil sunset, unless NMFS approves an Alternative Monitoring Plan as part of the Foundation Installation and Marine Mammal Monitoring Plan (*i.e.*, Nighttime Monitoring Plan) that reliably demonstrates the efficacy of detecting marine mammals at night with its proposed devices. Foundation installation will also not be initiated when the minimum visibility zones cannot be fully visually monitored, as determined by the lead PSO on duty. While monitoring itself is not mitigation, these measures contribute to more reliable detection efficiency and animals must be detected to trigger mitigative actions which reduce impacts.

Given the very small harassment zones resulting from HRG surveys and that the best available science indicates that any harassment from HRG surveys, should a marine mammal be exposed, would manifest as minor behavioral harassment only (*e.g.*, potentially some avoidance of the vessel), NMFS is not requiring any seasonal and daily restrictions for HRG surveys. However US Wind has planned only a limited amount of surveys (over 14 days) during daylight within the effective period of these regulations.

Noise Attenuation Systems

US Wind is required to employ noise abatement systems (NAS), also known as noise attenuation systems, during all foundation installation (*i.e.*, impact pile driving) activities to reduce the sound pressure levels that are transmitted through the water in an effort to reduce acoustic ranges to the Level A

harassment and Level B harassment acoustic thresholds and minimize, to the extent practicable, any acoustic impacts resulting from these activities. US Wind is required to use at least two NASs to ensure that measured sound levels do not exceed the levels modeled for a 10-dB sound level reduction for foundation installation, which is likely to include a double big bubble curtain or a double big bubble curtain combined with other NAS (e.g., hydro-sound damper, or an AdBm Helmholtz resonator), as well as the adjustment of operational protocols to minimize noise levels. As part of adaptive management, should the research and development phase of newer systems demonstrate effectiveness, US Wind may submit data on the effectiveness of these systems and request approval from NMFS to use them during foundation installation activities.

Two categories of NASs exist: primary and secondary. A primary NAS would be used to reduce the level of noise produced by foundation installation activities at the source, typically through adjustments to the equipment (e.g., hammer strike parameters). Primary NASs are still evolving and will be considered for use during mitigation efforts when the NAS has been demonstrated as effective in commercial projects. However, as primary NASs are not fully effective at eliminating noise, a secondary NAS would be employed. The secondary NAS is a device or group of devices that would reduce noise as it was transmitted through the water away from the pile, typically through a physical barrier that would reflect or absorb sound waves and therefore, reduce the distance the higher energy sound propagates through the water column. Together, these systems must reduce noise levels to those not exceeding modeled ranges to Level A harassment and Level B harassment isopleths corresponding to those modeled assuming 10-dB sound attenuation, pending results of SFV (see the *Sound Field Verification* section below and 50 CFR part 217—Regulations Governing The Taking And Importing Of Marine Mammals).

Noise abatement systems, such as bubble curtains, are used to decrease the sound levels radiated from a source. Bubbles create a local impedance change that acts as a barrier to sound transmission. The size of the bubbles determines their effective frequency band, with larger bubbles needed for lower frequencies. There are a variety of bubble curtain systems, confined or unconfined bubbles, and some with encapsulated bubbles or panels. Attenuation levels also vary by type of

system, frequency band, and location. Small bubble curtains have been measured to reduce sound levels but effective attenuation is highly dependent on depth of water, current, and configuration and operation of the curtain (Austin *et al.*, 2016; Koschinski and Lüdemann, 2013). Bubble curtains vary in terms of the sizes of the bubbles and those with larger bubbles tend to perform a bit better and more reliably, particularly when deployed with two separate rings (Bellmann, 2014; Koschinski and Lüdemann, 2013; Nehls *et al.*, 2016). Encapsulated bubble systems (e.g., Hydro Sound Dampers (HSDs)), can be effective within their targeted frequency ranges (e.g., 100–800 Hz), and when used in conjunction with a bubble curtain appear to create the greatest attenuation. The literature presents a wide array of observed attenuation results for bubble curtains. The variability in attenuation levels is the result of variation in design as well as differences in site conditions and difficulty in properly installing and operating in-water attenuation devices. Dähne *et al.* (2017) found that single bubble curtains that reduce sound levels by 7 to 10 dB reduced the overall sound level by approximately 12 dB when combined as a double bubble curtain for 6-m steel monopiles in the North Sea. During installation of monopiles (consisting of approximately 8-m in diameter) for more than 150 WTGs in comparable water depths (>25 m) and conditions in Europe indicate that attenuation of 10 dB is readily achieved (Bellmann, 2019; Bellmann *et al.*, 2020) using single bubble curtains for noise attenuation.

When a double big bubble curtain is used (noting a single bubble curtain is not allowed), US Wind is required to maintain numerous operational performance standards. These standards are defined in the regulatory text at the end of this rule, and include, but are not limited to, construction contractors must train personnel in the proper balancing of airflow to the bubble ring and US Wind must submit a performance test and maintenance report to NMFS. Corrections to the attenuation devices are to be carried out prior to impact pile driving. In addition, a full maintenance check (e.g., manually clearing holes) must occur prior to each pile being installed. If US Wind uses a noise mitigation device in addition to a double big bubble curtain, similar quality control measures are required. Should the research and development phase of newer systems demonstrate effectiveness, as part of adaptive management, US Wind may submit data

on the effectiveness of these systems and request approval from NMFS to use them during foundation installation activities.

US Wind is required to submit an SFV plan to NMFS for approval at least 180 days prior to installing foundations. They are also required to submit interim and final SFV data results to NMFS and make corrections to the NASs in the case that any SFV measurements demonstrate noise levels are above those modeled assuming 10 dB. These frequent and immediate reports allow NMFS to better understand the sound fields to which marine mammals are being exposed and require immediate corrective action should they be misaligned with anticipated noise levels within our analysis.

Noise abatement devices are not required during HRG surveys as they cannot practicably be employed around a moving survey ship, but US Wind is required to make efforts to minimize source levels by using the lowest energy settings on equipment that has the potential to result in harassment of marine mammals (e.g., boomers) and turning off equipment when not actively surveying. Overall, minimizing the amount and duration of noise in the ocean from any of the Project's activities through use of all means necessary (e.g., noise abatement, turning off power) will effect the least practicable adverse impact on marine mammals.

Clearance and Shutdown Zones

NMFS requires the establishment of both clearance and, where technically feasible, shutdown zones during Project activities that have the potential to result in harassment of marine mammals. The purpose of “clearance” of a particular zone is to minimize potential instances of auditory injury and more severe behavioral disturbances by delaying the commencement of an activity if marine mammals are near the activity. The purpose of a shutdown is to prevent a specific acute impact, such as auditory injury or severe behavioral disturbance of sensitive species, by halting the activity.

All relevant clearance and shutdown zones during Project activities will be monitored by NMFS-approved PSOs and PAM operators as described in the regulatory text at the end of this rule. At least one PAM operator must review data from at least 24 hours prior to foundation installation, and must actively monitor hydrophones for 60 minutes prior to commencement of these activities. Any North Atlantic right whale sighting at any distance by foundation installation PSOs, or

acoustically detected within the PAM monitoring zone (10 km), triggers a delay to commencing pile driving and shutdown. Any large whale sighted by a PSO or acoustically detected by a PAM operator that cannot be identified as a non-North Atlantic right whale must be treated as if it were a North Atlantic right whale.

Prior to the start of certain specified activities (*i.e.*, foundation installation, including soft-start, and HRG surveys), US Wind must ensure designated areas (*i.e.*, clearance zones as provided in tables 24 and 25) are clear of marine mammals prior to commencing activities to minimize the potential for and degree of harassment. For foundation installation, PSOs must visually monitor clearance zones for marine mammals for a minimum of 60 minutes prior to the activity, where the zone must be confirmed free of marine mammals at least 30 minutes directly prior to commencing these activities. During this period, the clearance zones will be monitored by both PSOs and a PAM operator. If a marine mammal is observed within a clearance zone during the clearance period, the activity will be delayed and may not begin until the animal(s) has been observed exiting its respective zone, or until an additional time period has elapsed with no further sightings (*i.e.*, 15 minutes for small odontocetes and pinnipeds and 30 minutes for all other species). In addition, foundation installation will be delayed upon a confirmed PAM detection of a North Atlantic right whale if the PAM detection is confirmed to have been located within the North Atlantic right whale PAM clearance zone (10,000 m). Any large whale sighted by a PSO that cannot be identified to species must be treated as if it were a North Atlantic right whale for the purposes of mitigation. PSOs and PAM operators must continue monitoring throughout the duration of foundation installation and for 30 minutes post-completion of the activity.

Clearance and shutdown zones have been developed in consideration of modeled distances to relevant PTS thresholds with respect to minimizing the potential for take by Level A harassment. The clearance and shutdown zones for North Atlantic right whales during monopile, jacket foundation, and Met tower foundation installation are visual observations at any distance by PSOs or any acoustic detection within the PAM monitoring zone (10 km; table 24). For North Atlantic right whales, there is an additional requirement that the clearance zone may only be declared clear if no confirmed North Atlantic

right whale acoustic detections (in addition to visual) have occurred during the 60-minute monitoring period. The visual clearance zone for other large whales from monopile installation is equal to the modeled maximum R_{95} percent distance to the Level B harassment threshold (5,250 m). The clearance zone for other large whales from 3-m pin pile installation is equal to the modeled maximum R_{95} percent distance to the Level A harassment threshold (1,400 m). The clearance zone for other large whales from 1.8-m pin pile installation is equal to twice the modeled maximum R_{95} percent distance to the Level B harassment threshold given the very small Level B harassment zone (100 m), which could be encompassed by the bubble curtains. The clearance zone for non-large whales (*i.e.*, delphinids and pilot whales, harbor porpoises, and seals) from monopile and 3-m pin pile installation is equal to double the modeled maximum R_{95} percent distances to the Level A harassment threshold for harbor porpoise (the most sensitive species). The clearance zone for 1.8-m pin pile installation is equal to double the modeled maximum R_{95} percent distance to the Level B harassment threshold given Level A harassment thresholds were not exceeded for this activity (*i.e.*, 0 m).

Once an activity begins, any marine mammal entering their respective shutdown zone would trigger the activity to cease. In the case of foundation installation, the shutdown requirement may be waived if it is not practicable to shutdown the equipment due to imminent risk of injury or loss of life to an individual, risk of damage to a vessel that creates risk of injury or loss of life for individuals, or where the lead engineer determines there is pile refusal or pile instability. In situations when shutdown is called for during impact pile driving, but US Wind determines shutdown is not practicable due to aforementioned emergency reasons, reduced hammer energy must be implemented when the lead engineer determines it is practicable. Specifically, pile refusal or pile instability could result in not being able to shut down pile driving immediately. Pile refusal occurs when the pile driving sensors indicate the pile is approaching refusal and a shut-down would lead to a stuck pile which then poses an imminent risk of injury or loss of life to an individual, or risk of damage to a vessel that creates risk for individuals. Pile instability occurs when the pile is unstable and unable to stay standing if the piling vessel were to “let go”. During these periods of instability, the

lead engineer may determine a shut-down is not feasible because the shut-down combined with impending weather conditions may require the piling vessel to “let go”, which then poses an imminent risk of injury or loss of life to an individual, or risk of damage to a vessel that creates risk for individuals. US Wind must document and report to NMFS all cases where the emergency exemption is taken.

After shutdown, foundation installation may be reinitiated once all clearance zones are clear of marine mammals for the minimum species-specific periods, or, if required to maintain pile stability, at which time the lowest hammer energy must be used to maintain stability. If foundation installation has been shut down due to the presence of a North Atlantic right whale, pile driving must not restart until the North Atlantic right whale has neither been visually or acoustically detected by PSOs and PAM operators for 30 minutes. Upon re-starting pile driving, soft-start protocols must be followed if pile driving has ceased for 30 minutes or longer.

The clearance and shutdown zone sizes vary by species and are shown in tables 24 and 25. US Wind is allowed to request modification to these zone sizes pending results of SFV (see the regulatory text at the end of this rule). Any changes to zone size would be part of adaptive management and would require NMFS’ approval. The 10 km PAM monitoring zone for North Atlantic right whales has been carried forward from the proposed rule into this final rule. A 10-km distance is a reasonable distance for a PAM system to monitor; thus, 10 km was added as the requirement for the PAM monitoring zone.

In addition to the clearance and shutdown zones that would be monitored both visually and acoustically, NMFS is requiring US Wind to establish a minimum visibility zone during foundation installation activities to ensure both visual and acoustic methods are used in tandem to detect marine mammals resulting in maximum detection capability. The minimum visibility zone is defined as the area over which PSOs must be able to visually detect marine mammals and must be visible for the duration of the 60-minute clearance period. This zone would extend from the location of the pile being driven out to 2,900 m (9,514 ft) for monopile installation, 1,400 m for 3-m pin pile installation, and 200 m for 1.8-m pin pile installation (table 24). During monopile and 3-m pin pile installation, the minimum visibility zone is equal to the modeled maximum

R_{95 percent} distances to the Level A harassment threshold for low-frequency cetaceans. The minimum visibility zone for 1.8-m pin piles is equal to the clearance zone, which is double the modeled maximum R_{95 percent} distance to the Level B harassment threshold (100 m) and four times the modeled maximum R_{95 percent} distance to the Level A harassment threshold (50 m) for low-frequency cetaceans. NMFS increased the 1.8-m pin pile minimum visibility zone given the very small zone sizes from this short (3 piles total) activity.

For HRG surveys, there are no mitigation measures prescribed for sound sources operating at frequencies greater than 180 kHz, as these would be expected to fall outside of marine mammal hearing ranges and would not result in harassment. However, all HRG survey vessels would be subject to the aforementioned vessel strike avoidance measures described earlier in this section. Furthermore, due to the frequency range and characteristics of some of the sound sources associated with lesser impacts, shutdown, clearance, and ramp-up procedures are not planned to be conducted during HRG surveys utilizing only non-impulsive sources (e.g., other parametric sub-bottom profilers). Shutdown,

clearance, and ramp-up procedures are planned to be conducted during HRG surveys utilizing SBPs and other non-parametric sub-bottom profilers (planned survey equipment that may result in take of marine mammals are presented in table 3 of the proposed rule (89 FR 504, January 4, 2024)). PAM would not be required during HRG surveys. While NMFS agrees that PAM can be an important tool for augmenting detection capabilities in certain circumstances, its utility in further reducing impacts during HRG survey activities is limited.

US Wind will be required to implement a 30-minute clearance period of the clearance zones (table 25) immediately prior to the commencing of the survey, or when there is more than a 30-minute break in survey activities and PSOs have not been actively monitoring. If a marine mammal is observed within a clearance zone during the clearance period, ramp up (described below) may not begin until the animal(s) have been observed voluntarily exiting its respective clearance zone or until an additional time period has elapsed with no further sighting (i.e., 15 minutes for small odontocetes and seals, and 30 minutes for all other species). When the clearance process has begun in

conditions with good visibility, including via the use of night vision equipment (i.e., 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.

Once the survey has commenced, US Wind would be required to shut down SBPs if a marine mammal enters a respective shutdown zone (table 25). In cases where 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 use of SBPs will not be allowed to commence or resume until the animal(s) has been confirmed to have left the shutdown 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. Any large whale sighted by a PSO within 1,000 m of the SBPs that cannot be identified as a non-North Atlantic right whale would be treated as if it were a North Atlantic right whale for the purposes of mitigation implementation.

TABLE 9—MINIMUM VISIBILITY, CLEARANCE, SHUTDOWN, AND LEVEL B HARASSMENT ZONES DURING IMPACT PILE DRIVING, ASSUMING 10 dB OF ATTENUATION

Monitoring zone	North Atlantic right whales	Other large whales	Delphinids and pilot whales	Harbor porpoises	Seals
Minimum visibility zone ¹	Monopiles: 2,900 m. 3-m pin piles: 1,400 m. 1.8-m pin piles: 200 m.				
Clearance zone	Any distance (visual) from the pile driving location or within PAM Monitoring Zone.	Monopiles: 5,250 m 3-m pin piles: 1,400 m. 1.8-m pin piles: 200 m. ²	Monopiles: 500 m. 3-m pin piles, 1.8-m pin piles: 200 m. ³		
Shutdown zone	Any distance (visual) from the pile driving location or within PAM Monitoring Zone.	Monopiles: 2,900 3-m pin piles: 1,400 m. 1.8-m Pin piles: 100 m. ⁴	Monopiles: 250 m. 3-m pin piles, 1.8-m pin piles: 100 m. ⁵		
PAM monitoring zone ⁶	10,000 m.				
Level B Harassment (Acoustic Range, R _{95%})	Monopiles: 5,250 m. 3-m pin piles: 500 m. 1.8-m pin piles: 100 m.				

¹ The minimum visibility zone is equal to the modeled maximum R_{95 percent} distances to the Level A harassment threshold for low-frequency cetaceans for monopiles and 3-m pin piles. The minimum visibility zone for 1.8-m pin piles is equal to the clearance zone which is double the modeled maximum R_{95 percent} distance to the Level B harassment threshold (100 m) and four times the modeled maximum R_{95 percent} distance to the Level A harassment threshold (50 m) for low frequency cetaceans. NMFS increased the 1.8 m pile minimum visibility zone given the very small zone sizes from this short (3 piles total) activity.

² The clearance zone for other large whales from monopile installation is equal to the modeled maximum R_{95 percent} distance to the Level B harassment threshold (5,250 m). The clearance zone for other large whales from 3-m pin pile installation is equal to the modeled maximum R_{95 percent} distance to the Level A harassment threshold (1,400 m) given the Level B harassment zone is less than this distance (500 m). The clearance zone for other large whales from 1.8-m pin pile installation is equal to twice the modeled maximum R_{95 percent} distance to the Level B harassment threshold given the very small Level B harassment zone (100 m) which could be encompassed by the bubble curtains.

³ The clearance zone for non-large whales (i.e., delphinids and pilot whales, harbor porpoises, and seals) from monopile and 3-m pin pile installation is equal to double the modeled maximum R_{95 percent} distance to the Level A harassment threshold for harbor porpoise (the most sensitive species). The clearance zone for 1.8-m pin pile installation is equal to double the modeled maximum R_{95 percent} distance to the Level B harassment threshold given Level A harassment thresholds were not exceeded for this activity (i.e., 0 m). US Wind requested the clearance zone for non-large whales be identical for PSO implementation ease.

⁴ The shutdown zones for other large whales from monopiles and 3-m pin pile installation are equal to the modeled maximum R_{95 percent} distances to the Level A harassment threshold for low-frequency cetaceans. The shutdown zone for other large whales from 1.8-m pin piles is equal to two times the modeled maximum R_{95 percent} distance to the Level A harassment threshold for low-frequency cetaceans.

⁵ The shutdown zones for non large whales from monopile and 3-m pin pile installation are equal to the modeled maximum R_{95 percent} distance to the Level A harassment threshold for harbor porpoise (the most sensitive species). The shutdown zone for non large whales from 1.8-m pin pile installation is equal to the modeled maximum R_{95 percent} distance to the Level B harassment threshold, given the Level A harassment thresholds were not exceeded for this activity (i.e., 0 m). US Wind requested the shutdown zone for non large whales be identical for PSO implementation ease.

⁶ The PAM system must be capable of detecting baleen whales at 10,000 m during pile driving. The system should also be designed to detect other marine mammals; however, it is not required these other species be detected out to 10,000 m given higher frequency calls and echolocation clicks are not typically detectable at large distances.

TABLE 10—HRG SURVEY CLEARANCE AND SHUTDOWN ZONES

Marine mammal species	Clearance zone (m) ²	Shutdown zone (m)
North Atlantic right whale	500	500
Other ESA-listed species (<i>i.e.</i> , fin, sei, sperm whale)	500	100
Other marine mammals ¹	200	100

¹ With the exception of seals and delphinid(s) from the genera *Delphinus*, *Lagenorhynchus*, *Stenella* or *Tursiops*, as described below.

In addition, NMFS has included a measure requiring US Wind to shutdown pile driving or HRG surveys in the event of a live cetacean stranding where the NMFS Marine Mammal Stranding Network is engaged in herding or other interventions to return animals to the water. Marine mammals involved in live stranding events (or near-shore atypical milling) are considered especially susceptible to the effects of additional stressors. These shutdown procedures are not related to the investigation of the cause of any such stranding and their implementation is not intended to imply that the activity of the authorized entity is the cause of the stranding. Rather, shutdown procedures are intended to protect marine mammals exhibiting indicators of distress by minimizing their exposure to possible additional stressors, regardless of the factors that contributed to the stranding. US Wind would be required to shut down pile driving activities according to the measure described in the regulatory text.

Soft-Start/Ramp Up

The use of a soft-start or ramp-up procedure is believed to provide additional protection to marine mammals by warning them or providing them with a chance to leave the area, prior to the hammer or HRG equipment operating at full capacity. Soft-start typically involves initiating hammer operation at a reduced energy level relative to full operating capacity followed by a waiting period. Typically, NMFS requires a soft-start procedure of the applicant performing four to six strikes per minute at 10 to 20 percent of the maximum hammer energy, for a minimum of 20 minutes. For foundation installation, NMFS notes that it is difficult to specify a reduction in energy for any given hammer because of variation across drivers and installation conditions. The final methodology will be developed by US Wind, in consultation with NMFS, considering final design details including site-specific soil properties and other

considerations. A general soft-start requirement for impact pile driving is incorporated into the regulations. HRG survey operators are required to ramp-up sources when the acoustic sources are used unless the equipment operates on a binary on/off switch. The ramp-up would involve starting from the smallest setting and gradually increasing to the operating level over a period of approximately 30 minutes.

Soft-start and ramp-up will be required at the beginning of each day’s activity and at any time following a cessation of activity of 30 minutes or longer. Prior to soft-start or ramp-up beginning, the operator must receive confirmation from the PSO that the clearance zone is clear of any marine mammals.

Fishery Monitoring Surveys

While the likelihood of US Wind’s fishery monitoring surveys impacting marine mammals is minimal, NMFS requires US Wind to adhere to gear and vessel mitigation measures to reduce potential impacts to the extent practicable. In addition, all crew undertaking the fishery monitoring survey activities are required to receive protected species identification training prior to activities occurring and attend the aforementioned onboarding training. The specific requirements that NMFS has set for the fishery monitoring surveys can be found in the regulatory text at the end of this rule.

Based on our evaluation of the mitigation measures, as well as other measures considered by NMFS, NMFS has determined that these measures will provide the means of affecting the least practicable adverse impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

As noted in the Changes from the Proposed to Final Rule section, we have added, modified, or clarified a number of monitoring and reporting measures since the proposed rule. These changes

are described in detail below. Since the proposed rule, we have clarified the number of platforms for PSOs to be a total of three platforms, including the pile driving vessel and two PSO support vessels, as the number of platforms was not specified in the proposed rule. In addition, we have added specific requirements for SFV monitoring.

In order to promulgate a rulemaking for an activity, section 101(a)(5)(A) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (*i.e.*, individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (*i.e.*, behavioral or physiological) to acoustic stressors (*i.e.*, acute, chronic, or cumulative), other

stressors, or cumulative impacts from multiple stressors;

- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and/or
- Mitigation and monitoring effectiveness.

Separately, monitoring is also regularly used to support mitigation implementation (*i.e.*, mitigation monitoring) and monitoring plans typically include measures that both support mitigation implementation and increase our understanding of the impacts of the activity on marine mammals.

During the planned activities, visual monitoring by NMFS-approved PSOs will be conducted before, during, and after all impact pile driving and HRG surveys. PAM will also be conducted during impact pile driving. Visual observations and acoustic detections will be used to support the activity-specific mitigation measures (*e.g.*, clearance zones). To increase understanding of the impacts of the activity on marine mammals, PSOs must record all incidents of marine mammal occurrence at any distance from the piling locations, near the HRG acoustic sources. PSOs will document all behaviors and behavioral changes, at any distance from the foundation installation locations (*i.e.*, location of impact pile driving) and near the HRG acoustic sources. PSOs will document all behaviors and behavioral changes, in concert with distance from an acoustic source. Further, SFV during foundation installation and unexploded ordnance (UXO)/munition of explosive concern (MEC) detonation is required to ensure compliance and that the potential impacts are within the bounds of that analyzed. The required monitoring, including PSO and PAM Operator qualifications, is described below, beginning with PSO measures that are applicable to all the aforementioned activities and PAM (for specific activities).

Protected Species Observer and PAM Operator Requirements

US Wind is required to employ NMFS-approved PSOs and PAM operators. PSOs are trained professionals who are tasked with visually monitoring for marine mammals during pile driving and HRG surveys. The primary purpose of a PSO

is to carry out the monitoring, collect data, and, when appropriate, call for the implementation of mitigation measures. In addition to visual observations, NMFS requires US Wind to conduct PAM by PAM operators during impact pile driving and vessel transit.

The inclusion of PAM, which would be conducted by NMFS-approved PAM operators, following standardized measurement, processing methods, reporting metrics, and metadata standards for offshore wind, combined with visual data collection, is a valuable way to provide the most accurate record of species presence as possible. These two monitoring methods are well understood to provide best results when combined together (*e.g.*, Barlow and Taylor, 2005; Clark *et al.*, 2010; Gerrodette *et al.*, 2011; Van Parijs *et al.*, 2021). Acoustic monitoring, in addition to visual monitoring, increases the likelihood of detecting marine mammals within the shutdown and clearance zones of Project activities, which when applied in combination of required shutdowns helps to further reduce the risk of marine mammals being exposed to sound levels that could otherwise result in acoustic injury or more intense behavioral harassment.

The exact configuration and number of PAM systems depends on the size of the zone(s) being monitored, the amount of noise expected in the area, and the characteristics of the signals being monitored. More closely spaced hydrophones would allow for more directionality, and perhaps, range to the vocalizing marine mammals; although, this approach would add additional costs and greater levels of complexity to the Project. Larger baleen cetacean species (*i.e.*, mysticetes), which produce loud and lower-frequency vocalizations, may be able to be heard with fewer hydrophones spaced at greater distances. However, smaller cetaceans (such as mid-frequency delphinids or odontocetes) may necessitate more hydrophones and to be spaced closer together given the shorter range of the shorter, mid-frequency acoustic signals (*e.g.*, whistles and echolocation clicks). As there are no “perfect fit” single-optimal-array configurations, NMFS will consider and approve these set-ups, as appropriate, on a case-by-case basis during the PAM Plan review. Specifically, US Wind will be required to provide a plan that describes an optimal configuration for collecting the required marine mammal data, based on the real-world circumstances in the project area, recognizing that we will continue to learn more as monitoring results from other wind projects are submitted.

NMFS does not formally administer any PSO or PAM operator training program or endorse specific providers but will approve PSOs and PAM operators that have successfully completed courses that meet the curriculum and trainer requirements referenced below and further specified in the regulatory text at the end of this rule. PSOs can act as PAM operators or visual PSOs (but not simultaneously) as long as they demonstrate that their training and experience are sufficient to perform each task.

NMFS will provide PSO and PAM operator approvals in the context of the need to ensure that PSOs and PAM operators have the necessary training and/or experience to carry out their duties competently. NMFS may approve PSOs as conditional or unconditional. Conditional approval may be given to one who is trained but has not yet attained the requisite experience. Unconditional approval is given to one who is trained and has attained the necessary experience. The specific requirements for conditional and unconditional approval can be found in the regulatory text at the end of this rule (see § 217.345(a)(6)).

Conditionally-approved PSOs will be paired with an unconditionally-approved PSO to ensure that the quality of marine mammal observations and data recording is kept consistent. Additionally, activities requiring PSO and/or PAM operator monitoring must have a lead on duty. The visual PSO field team, in conjunction with the PAM team, (*i.e.*, together, the marine mammal monitoring team), would have a lead member (designated as the “Lead PSO” or “Lead PAM operator”) who would be required to meet the unconditional approval standard.

Although PSOs and PAM operators must be approved by NMFS, third-party observer providers and/or companies seeking PSO and PAM operator staffing should expect that those having satisfactorily completed acceptable training and with the requisite experience (if required) will be quickly approved. US Wind is required to request PSO and PAM operator approvals 60 days prior to those personnel commencing work. An initial list of previously approved PSO and PAM operators must be submitted by US Wind at least 30 days prior to the start of the Project. Should US Wind require additional PSOs or PAM operators throughout the Project, US Wind must submit a subsequent list of pre-approved PSOs and PAM operators to NMFS at least 15 days prior to planned use of that PSO or PAM operator. A PSO may be trained and/or

experienced as both a PSO and PAM operator and may perform either duty, pursuant to scheduling requirements (and vice versa).

A minimum number of PSOs would be required to actively observe for the presence of marine mammals during certain project activities, generally speaking, with more PSOs being required as the mitigation zone sizes increase. A minimum number of PAM operators would be required to actively monitor for the presence of marine mammals during foundation installation. The types of equipment required (e.g., big eyes on the pile driving vessel) are also designed to increase marine mammal detection capabilities. Specifics on these types of requirements can be found in the regulations at the end of this rule.

At least three PSOs must be on duty at a time on the foundation installation vessel/platform. A minimum of three PSOs must be active on each of at least two dedicated PSO vessels. US Wind must employ a minimum of three PSO platforms, including the pile driving platform and at least two PSO vessels. This requirement has been added since the proposed rule in response to a comment from the Commission to clarify the number of required PSO platforms during pile driving activity. The vessel must be located at the best vantage point to observe and document marine mammal sightings in proximity to the clearance and, if applicable, shutdown zones. At least one PAM operator per acoustic data stream (equivalent to the number of acoustic buoys) must be on-duty and actively monitoring per platform during foundation installation.

At least one PSO must be on-duty during HRG surveys conducted during daylight hours; and at least two PSOs must be on-duty during HRG surveys conducted during nighttime.

As part of their monitoring duties, PSOs and PAM operators are responsible for data collection. The data collected by PSO and PAM operators and subsequent analysis provide the necessary information to inform an estimate of the amount of take that occurred during the Project, better understand the impacts of the Project on marine mammals, address the effectiveness of monitoring and mitigation measures, and to adaptively manage activities and mitigation in the future. Data reported includes information on marine mammal sightings (e.g., numbers of animals and their behavior), activity occurring at time of sighting, monitoring conditions, and if mitigative actions were taken. Specific data collection requirements

are contained within the regulations at the end of this rule.

US Wind is required to submit a Foundation Installation Monitoring Plan and a PAM Plan to NMFS 180 days in advance of foundation installation activities. The Plan must include details regarding PSO and PAM monitoring protocols and equipment proposed for use, as described in the regulatory text at the end of this rule. NMFS must approve the plan prior to foundation installation activities commencing. Specific details on NMFS' PSO or PAM operator qualifications and requirements can be found in 50 CFR part 217, subpart II, set out at the end of this rule. Additional information can be found in US Wind Marine Mammal Monitoring and Mitigation Plan (appendix B) on the NMFS' website at: <https://www.fisheries.noaa.gov/action/incidental-take-authorization-us-wind-inc-construction-and-operation-maryland-offshore-wind>.

Sound Field Verification

Previously in the proposed rule, US Wind had to conduct SFV measurements during all 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 distances to thresholds that are at or below those modeled assuming 10 dB of attenuation. Subsequent SFV measurements are also required should larger piles be installed or additional piles be driven that are anticipated to produce longer distances to harassment isopleths than those previously measured (e.g., higher hammer energy, greater number of strikes, etc.).

For the final rule, NMFS has expanded this requirement for SFV during foundation installation to align with the BiOp. At minimum, thorough SFV must be conducted in: for each construction year, for the first three monopiles installed and the first three full jacket foundations (all piles) installed. While pile driving is prohibited from December–April, if pile driving is required and must occur in December due to unforeseen circumstances, thorough SFV must be conducted on the first monopile and first jacket foundation (all piles) installed in December (winter sound speed profile). Thorough SFV must also be conducted for the first foundation for any foundation scenarios that were modeled for the exposure analysis but do not fall into one of the scenarios described above. During thorough SFV, installation of the next foundation (of the same type/foundation method) may

not proceed until US Wind has reviewed the initial results from the thorough SFV and determined that there were no exceedances of any distances to the identified thresholds based on modeling assuming 10 dB of attenuation.

If any of the thorough SFV measurements from any pile indicate that the distance to any isopleth of concern for any species is greater than those modeled assuming 10 dB of attenuation, US Wind must notify NMFS within 24 hours of reviewing the thorough SFV measurements and must implement the measures described in detail in the regulatory text at the end of this final rule for the next pile of the same type/installation methodology, as applicable.

Abbreviated SFV monitoring must be performed on all foundation installations for which the thorough SFV monitoring described above is not conducted. In addition, SFV measurements must be conducted upon commencement of turbine operations to estimate turbine operational source levels, in accordance with a NMFS-approved Foundation Installation Pile Driving SFV Plan. The measurements and reporting associated with SFV can be found in the regulatory text at the end of this rule. The requirements are extensive to ensure monitoring is conducted appropriately and the reporting frequency is such that US Wind is required to make adjustments quickly (e.g., ensure bubble curtain hose maintenance, check bubble curtain air pressure supply, add additional sound attenuation, etc.) to ensure marine mammals are not experiencing noise levels above those considered in this analysis. For recommended SFV protocols for impact pile driving, please consult International Organization for Standardization (ISO) 18406, “Underwater acoustics—Measurement of radiated underwater sound from percussive pile driving” (2017).

Reporting

Prior to any construction activities occurring, US Wind will provide a report to NMFS Office of Protected Resources that demonstrates that all US Wind personnel, including the vessel crews, vessel captains, PSOs, and PAM operators, have completed all required trainings.

NMFS will require standardized and frequent reporting from US Wind during the life of the regulations and the LOA. All data collected relating to the Project will be recorded using industry-standard software (e.g., Mysticetus or a similar software) installed on field laptops and/or tablets. US Wind is

required to submit weekly, monthly, annual, situational, and final reports. The specifics of what we require to be reported can be found in the regulatory text at the end of this final rule.

Weekly Report—During foundation installation activities, US Wind would be required to compile and submit weekly marine mammal monitoring reports for foundation installation activities to NMFS Office of Protected Resources that document the daily start and stop of all pile-driving activities, 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 abatement system(s) (e.g., system type, distance deployed from the pile, bubble rate, etc.), and abbreviated SFV results. Weekly reports will be due on Wednesday for the previous week (Sunday to Saturday). The weekly reports are also required to identify which turbines become operational and when (a map must be provided). Once all foundation pile installation is complete, weekly reports would no longer be required.

Monthly Report—US Wind is required to compile and submit monthly reports to NMFS Office of Protected Resources 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, and route), number of piles installed, all detections of marine mammals, and any mitigative actions taken. The monthly report would identify which turbines become operational and when, and a map must be provided. Once all foundation pile installation is complete, monthly reports would no longer be required.

Annual Reporting—US Wind is required to submit an annual marine mammal monitoring (both PSO and PAM) report to NMFS Office of Protected Resources annually, describing, in detail, all of the information required in the monitoring section above for the previous calendar year. A final annual report must be prepared and submitted within 30 calendar days following receipt of any NMFS comments on the draft report.

Final Reporting—US Wind must submit its draft 5-year report(s) to NMFS Office of Protected Resources. The report must contain, but is not limited to, a description of activities conducted (including GIS files where relevant), and all visual and acoustic monitoring, including SFV and monitoring effectiveness, conducted under the LOA

within 90 calendar days of the completion of activities occurring under the LOA. A final 5-year report must be prepared and submitted within 60 calendar days following receipt of any NMFS comments on the draft report. Full PAM detection data, metadata, and location of recorders must be submitted within 90 days following completion of impact pile driving foundations and every 90 calendar days for transit lane PAM using the International Organization for Standardization (ISO) standard metadata forms and instructions available on the NMFS Passive Acoustic Reporting System website (<https://www.fisheries.noaa.gov/resource/document/passive-acoustic-reporting-system-templates>). Concurrently, the full acoustic recordings from real-time systems must also be sent to the National Centers for Environmental Information (NCEI, <https://www.ncei.noaa.gov/products/passive-acoustic-data>) for archiving.

Situational Reporting—Specific situations encountered during the development of the Project would require immediate reporting. For instance, if a North Atlantic right whale is observed at any time by PSOs or Project personnel, the sighting must be immediately (if not feasible, as soon as possible, and no longer than 24 hours after the sighting) reported to NMFS. If a North Atlantic right whale is acoustically detected at any time via a Project-related PAM system, the detection must be reported as soon as possible and no longer than 24 hours after the detection to NMFS 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.

If a sighting of a stranded, entangled, injured, or dead marine mammal occurs, the sighting must be reported within 24 hours to NMFS Office of Protected Resources, the NMFS Greater Atlantic Stranding Coordinator for the New England/Mid-Atlantic area (866-755-6622) in the Northeast Region (if in the Southeast Region (NC to FL), contact 877-942-5343), and the U.S. Coast Guard within 24 hours.

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, US Wind must immediately report the incident to NMFS. If in the Greater Atlantic Region (Maine to Virginia), US Wind must call the NMFS Greater Atlantic Stranding Hotline. Separately, US Wind must also

and immediately report the incident to NMFS Office of Protected Resources and GARFO. US Wind must immediately cease all on-water activities, including pile driving, until 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 MMPA. NMFS Office of Protected Resources may impose additional measures covered in the adaptive management provisions of this rule to minimize the likelihood of further prohibited take and ensure MMPA compliance. US Wind may not resume their activities until notified by NMFS.

In the event of any lost gear associated with the fishery surveys, US Wind must report to the loss to GARFO 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.

The specifics of what NMFS Office of Protected Resources requires to be reported is listed at the end of this rulemaking in the regulatory text.

Sound Field Verification—US Wind is required to submit interim SFV reports after each foundation installation as soon as possible but within 48 hours for thorough SFV. Abbreviated SFV reports must be included in the weekly monitoring reports. A final SFV report for all foundation installations will be required within 90 days following completion of acoustic monitoring.

Adaptive Management

These regulations contain an adaptive management component. Our understanding of the effects of offshore wind construction activities (e.g., acoustic stressors) on marine mammals continues to evolve, which makes the inclusion of an adaptive management component both valuable and necessary within the context of 5-year regulations.

The monitoring and reporting requirements in this final rule will provide NMFS with information that helps us to better understand the impacts of the Project's activities on marine mammals and informs our consideration of whether any changes to mitigation and monitoring are appropriate. The use of adaptive management allows NMFS to consider new information and modify mitigation, monitoring, or reporting requirements, as appropriate, with input from US Wind regarding practicability, if such modifications will have a reasonable likelihood of more effectively accomplishing the goal of the measures.

The following are some of the possible sources of new information to be considered through the adaptive management process: (1) results from monitoring reports, including the weekly, monthly, situational, and annual reports required; (2) results from research on marine mammals, noise impacts, or other related topics; and (3) any information that reveals that marine mammals may have been taken in a manner, extent, or number not authorized by these regulations or subsequent LOA. Adaptive management decisions may be made at any time, as new information warrants it. NMFS may consult with US Wind regarding the practicability of the modifications.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” by mortality, serious injury, or by Level A harassment and Level B harassment, we consider other factors, such as the likely nature of any behavioral responses (*e.g.*, intensity, duration), the context of any such responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS’ implementing regulations (54 FR 40338, September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

In the Estimated Take section, we listed the maximum number of allowable takes by Level A harassment and Level B harassment that could occur from US Wind’s specified activities based on the methods described in the proposed rule. The

impact that any given take would have is dependent on many case-specific factors that need to be considered in the negligible impact analysis (*e.g.*, the context of behavioral exposures such as duration or intensity of a disturbance, the health of impacted animals, the status of a species that incurs fitness-level impacts to individuals, *etc.*). In this final rule, we evaluate the likely impacts of the enumerated harassment takes that may be authorized in the context of the specific circumstances surrounding these predicted takes. We also collectively evaluate this information, as well as other more tax-specific information and mitigation measure effectiveness, in group-specific discussions that support our negligible impact conclusions for each stock. As described above, no serious injury or mortality is expected or may be authorized for any species or stock.

The Description of the Specified Activities section describes US Wind’s specified activities that may result in take of marine mammals and an estimated schedule for conducting those activities. US Wind has provided a realistic construction schedule although we recognize schedules may shift for a variety of reasons (*e.g.*, weather or supply delays). However, US Wind would not be authorized to exceed the maximum annual of take authorized in any given year or across the five year effective period of the regulations, indicated in tables 6 and 7, respectively.

We base our analysis and negligible impact determination on the maximum number of takes expected to occur annually and across the 5-year effective period of these regulations, as well as extensive qualitative consideration of other contextual factors that influence the severity and nature of impact the takes have on the affected individuals and the number and the number of individuals affected. As stated before, the number of takes, both maximum annual and 5-year total, alone are only a part of the analysis.

To avoid repetition, we provide some general analysis in this Negligible Impact Analysis and Determination section that applies to all the species listed in table 3 given that some of the anticipated effects of US Wind’s construction activities on marine mammals are expected to be relatively similar in nature. Then, we subdivide into more detailed discussions for mysticetes, odontocetes, and pinnipeds which have broad life history traits that support an overarching discussion of some factors considered within the analysis for those groups (*e.g.*, habitat-use patterns, high-level differences in feeding strategies).

Last, we provide a negligible impact determination for each species or stock, providing species or stock-specific information or analysis, where appropriate, for example, for North Atlantic right whales given the population status. Organizing our analysis by grouping species or stocks that share common traits or that would respond similarly to effects of US Wind’s activities, and then providing species- or stock-specific information allows us to avoid duplication while ensuring that we have analyzed the effects of the specified activities on each affected species or stock. It is important to note that in the group or species sections, we base our negligible impact analysis on the maximum annual take that is predicted under the 5-year rule, as well as the 5-year total; however, WTG, Met tower, and OSS foundation installation, which are expected to result in the majority of the impacts, are scheduled to occur within the first 3 years of the five year effective period of this rule (2025 through 2027) (table 20 in the proposed rule and tables 6 and 7 in this final rule).

As described previously, no serious injury or mortality is anticipated or authorized in this rule. Any Level A harassment authorized would be in the form of auditory injury (*i.e.*, PTS) and not non-auditory injury (*e.g.*, lung injury or gastrointestinal injury from detonations). The amount of harassment US Wind has requested, and NMFS has authorized, is based on exposure models that consider the outputs of acoustic source and propagation models and other data such as frequency of occurrence or group sizes. Several conservative parameters and assumptions are ingrained into these models, modeling the impact installation of all piles at a maximum hammer energy and application of the May sound speed profile to all months within a given season. The exposure model results do not reflect the clearance or shutdown measures or avoidance response. The amount of take requested and authorized also reflects careful consideration of other data (*e.g.*, group size data) and, for Level A harassment potential of some large whales, the consideration of mitigation measures. For all species, the amount of take authorized represents the maximum amount of Level A harassment and Level B harassment that could occur.

Behavioral Disturbance

In general, NMFS anticipates that impacts on an individual that has been harassed are likely to be more intense when exposed to higher received levels

and for a longer duration, though this is in no way a strictly linear relationship for behavioral effects across species, individuals, or circumstances, and less severe impacts result when exposed to lower received levels for a brief duration. However, there is also growing evidence of the importance of contextual factors such as distance from a source in predicting marine mammal behavioral response to sound (*i.e.*, sounds of a similar level emanating from a more distant source have been shown to be less likely to evoke a response of equal magnitude (DeRuiter and Doukara, 2012; Falcone *et al.*, 2017)). As described in the “Potential Effects to Marine Mammals and their Habitat” section of the proposed rule, the intensity and duration of any impact resulting from exposure to the specified activities is dependent upon a number of contextual factors including, but not limited to, sound source frequencies, whether the sound source is moving towards the animal, hearing ranges of marine mammals, behavioral state at time of exposure, status of individual exposed (*e.g.*, reproductive status, age class, health) and an individual’s experience with similar sound sources. Southall *et al.* (2021), Ellison *et al.* (2012), and Moore and Barlow (2013), among others, emphasize the importance of context (*e.g.*, behavioral state of the animals, distance from the sound source) in evaluating behavioral responses of marine mammals to acoustic sources.

Harassment of marine mammals may result in behavioral modifications (*e.g.*, avoidance, temporary cessation of foraging or communicating, changes in respiration or group dynamics, masking) or may result in auditory impacts such as hearing loss. In addition, some of the lower-level physiological stress responses (*e.g.*, change in respiration, change in heart rate) discussed previously would likely co-occur with the behavioral modifications, although these physiological responses are more difficult to detect and fewer data exist relating these responses to specific received levels of sound. Takes by Level B harassment, then, may have a stress-related physiological component as well; however, we would not expect the specified activities to produce conditions of long-term and continuous exposure to noise leading to long-term physiological stress responses in marine mammals that could affect reproduction or survival.

In the range of exposures that might result in Level B harassment (which by nature of the way it is modeled/counted, occurs within 1 day), the less severe end might include exposure to

comparatively lower levels of a sound, at a greater distance from the animal, for a few or several minutes. A less severe exposure of this nature could result in a behavioral response such as avoiding an area that an animal would otherwise have chosen to move through or feed in for some amount of time, or breaking off one or a few feeding bouts. More severe effects could occur if an animal gets close enough to the source to receive a comparatively higher level, is exposed continuously to one source for a longer time, or is exposed intermittently to different sources throughout a day. Such effects might result in an animal having a more severe avoidance response and leaving a larger area for a day or more or potentially losing feeding opportunities for a day or more. Such severe behavioral effects are expected to occur infrequently, though, and given the extensive mitigation and monitoring measures included in this rule, we expect severe behavioral effects to be minimized.

Many species perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (*i.e.*, a 24-hour cycle). Behavioral reactions to noise exposure, when taking place in a biologically important context, such as disruption of critical life functions, displacement, or avoidance of important habitat, are more likely to be significant if they last more than 1 day or recur on subsequent days (Southall *et al.*, 2007) due to diel and lunar patterns in diving and foraging behaviors observed in many cetaceans (Baird *et al.*, 2008; Barlow *et al.*, 2020; Henderson *et al.*, 2016; Schorr *et al.*, 2014). It is important to note the water depth in the Project area is shallow (ranging up to 10–45 m in the ECRs, and 13 to 41.5 m in the Lease Area) and deep diving species, such as sperm whales, are not expected to be engaging in deep foraging dives when exposed to noise above NMFS harassment thresholds during the specified activities. Therefore, we do not anticipate impacts to deep foraging behavior to be impacted by the specified activities.

It is important to identify that the estimated number of takes for each stock does not necessarily equate to the number of individual marine mammals expected to be harassed (which may be lower, depending on the circumstances), but rather to the instances of take (*e.g.*, exposures above the Level B harassment thresholds) that may occur. These instances may represent brief exposures of either seconds to minutes for HRG surveys, or, in some cases, longer durations of exposure within (but not exceeding) a day (*e.g.*, pile driving). Some members of a species or stock may

experience one exposure (*i.e.*, be taken on one day) as they move through an area, while other individuals may experience recurring instances of take over multiple days throughout the year, in which case the number of individuals taken is smaller than the total estimated take for that species or stock. In short, for species that are more likely to be migrating through the area and/or for which only a comparatively smaller number of takes are predicted (*e.g.*, some of the mysticetes), it is more likely that each take represents a different individual. However, for non-migrating species and/or species with larger amounts of predicted take, we expect that the total anticipated takes represent exposures of a smaller number of individuals of which some would be taken across multiple days.

For US Wind, impact pile driving of foundation piles is most likely to result in a higher magnitude and severity of behavioral disturbance than HRG surveys. Impact pile driving has higher source levels and longer durations (on an annual basis) than HRG surveys. HRG survey equipment also produces much higher frequencies than pile driving, resulting in minimal sound propagation. While impact pile driving for foundation installation is anticipated to be most impactful for these reasons, impacts are minimized through implementation of mitigation measures, including use of a sound attenuation system, soft-starts, the implementation of clearance zones that would facilitate a delay to pile driving commencement, and implementation of shutdown zones. All these measures are designed to avoid or minimize harassment. For example, given sufficient notice through the use of soft-start, marine mammals are expected to move away from a sound source that is disturbing prior to becoming exposed to very loud noise levels. The requirement to couple visual monitoring and PAM before and during all foundation installation would increase the overall capability to detect marine mammals rather than when one method is used alone.

Occasional, milder behavioral reactions are unlikely to cause long-term consequences for individual animals or populations, and even if some smaller subset of the takes are in the form of a longer (several hours or a day) and more severe response, if they are not expected to be repeated over numerous or sequential days, impacts to individual fitness are not anticipated. Also, the effect of disturbance is strongly influenced by whether it overlaps with biologically important habitats when individuals are present—avoiding biologically important habitats will

reduce the likelihood of more significant behavioral impacts, for example reduced or lost foraging (Keen *et al.*, 2021). Nearly all studies and experts agree that infrequent exposures of a single day or less are unlikely to impact an individual's overall energy budget (Farmer *et al.*, 2018; Harris *et al.*, 2017; King *et al.*, 2015; National Academy of Science, 2017; New *et al.*, 2014; Southall *et al.*, 2007; Villegas-Amtmann *et al.*, 2015).

Temporary Threshold Shift

TTS is one form of Level B harassment that marine mammals may incur through exposure to the specified activities and, as described earlier, the takes by Level B harassment may represent takes in the form of direct behavioral disturbance, TTS, or both. As discussed in the "Potential Effects of Specified Activities on Marine Mammals and their Habitat" section of the proposed rule, in general, TTS can last from a few minutes to days, be of varying degree, and occur across different frequency bandwidths, all of which determine the severity of the impacts on the affected individual, which can range from minor to more severe. Impact pile driving is a broadband noise source but generates sounds in the lower frequency ranges (with most of the energy below 1–2 kHz, but with a small amount of energy ranging up to 20 kHz); therefore, in general and all else being equal, we would anticipate the potential for TTS is higher in low-frequency cetaceans (*i.e.*, mysticetes) than other marine mammal hearing groups and would be more likely to occur in frequency bands in which they communicate. However, we would not expect the TTS to span the entire communication or hearing range of any species given that the frequencies produced by these activities do not span entire hearing ranges for any particular species. Additionally, though the frequency range of TTS that marine mammals might sustain would overlap with some of the frequency ranges of their vocalizations, the frequency range of TTS from US Wind's pile driving activities would not typically span the entire frequency range of one vocalization type, much less span all types of vocalizations or other critical auditory cues for any given species. The required mitigation measures further reduce the potential for TTS in mysticetes.

Generally, both the degree of TTS and the duration of TTS would be greater if the marine mammal is exposed to a higher level of energy (which would occur when the peak dB level is higher or the duration is longer). The threshold

for the onset of TTS was discussed previously (refer back to Estimated Take section). However, source level alone is not a predictor of TTS. An animal would have to approach closer to the source or remain in the vicinity of the sound source appreciably longer to increase the received SEL, which would be difficult considering the required mitigation and the nominal speed of the receiving animal relative to the stationary sources such as impact pile driving. The recovery time is also of importance when considering the potential impacts from TTS. In TTS laboratory studies (as discussed in the "Potential Effects of the Specified Activities on Marine Mammals and their Habitat" section of the proposed rule), some using exposures of almost an hour in duration or up to 217 SEL, almost all individuals recovered within 1 day or less (often in minutes) and we note that while the pile-driving activities last for hours a day, it is unlikely that most marine mammals would stay in the close vicinity of the source long enough to incur more severe TTS. Overall, given the small number of times that any individual might incur TTS, the low degree of TTS and the short anticipated duration, and the unlikely scenario that any TTS overlapped the entirety of a critical hearing range, it is unlikely that TTS (of the nature expected to result from the Project's activities) would result in behavioral changes or other impacts that would impact any individual's (of any hearing sensitivity) reproduction or survival.

Permanent Threshold Shift

NMFS may authorize a very small amount of take by PTS to some marine mammal individuals. The numbers of annual takes by Level A harassment that may be authorized are relatively low for all marine mammal stocks and species (table 22). The only activity incidental to which we anticipate PTS may occur is from exposure to impact pile driving, which produces sounds that are both impulsive and primarily concentrated in the lower frequency ranges (below 1 kHz) (David, 2006; Krumpel *et al.*, 2021).

There are no PTS data on cetaceans and only one recorded instance of PTS being induced in older harbor seals (Reichmuth *et al.*, 2019). However, available TTS data of mid-frequency hearing specialists exposed to mid- or high-frequency sounds (Southall *et al.*, 2007; NMFS, 2018; Southall *et al.*, 2019) suggest that most threshold shifts occur in the frequency range of the source up to one octave higher than the source. We would anticipate a similar result for PTS. Further, no more than a small

degree of PTS is expected to be associated with any of the incurred Level A harassment, given that it is unlikely that animals would stay in the close vicinity of a source for a duration long enough to produce more than a small degree of PTS.

PTS would consist of minor degradation of hearing capabilities occurring predominantly at frequencies one-half to one octave above the frequency of the energy produced by pile driving (*i.e.*, the low-frequency region below 2 kHz) (Cody and Johnstone, 1981; McFadden, 1986; Finneran, 2015), not severe hearing impairment. If hearing impairment occurs from either impact pile driving, it is most likely that the affected animal would lose a few decibels in its hearing sensitivity, which in most cases is not likely to meaningfully affect its ability to forage and communicate with conspecifics. In addition, during impact pile driving, given sufficient notice through use of soft-start prior to implementation of full hammer energy during impact pile driving, marine mammals are expected to move away from a sound source that is disturbing prior to it resulting in severe PTS.

Auditory Masking or Communication Impairment

The ultimate potential impacts of masking on an individual are similar to those discussed for TTS (*e.g.*, decreased ability to communicate, forage effectively, or detect predators), but an important difference is that masking only occurs during the time of the signal, versus TTS, which continues beyond the duration of the signal. Masking may also result from the sum of exposure to multiple signals, none of which might individually cause TTS. Fundamentally, masking is referred to as a chronic effect because one of the key potential harmful components of masking is its duration—the fact that an animal would have reduced ability to hear or interpret critical cues becomes much more likely to cause a problem the longer it is occurring. Inherent in the concept of masking is the fact that the potential for the effect is only present during the times that the animal and the source are in close enough proximity for the effect to occur (and further, this time period would need to coincide with a time that the animal was utilizing sounds at the masked frequency).

As our analysis has indicated, for this Project we expect that impact pile driving foundations have the greatest potential to mask marine mammal signals, and this pile driving may occur for several, albeit intermittent, hours per day, for multiple days per year. Masking

is fundamentally more of a concern at lower frequencies (which are pile-driving dominant frequencies) because low frequency signals propagate significantly further than higher frequencies. Low frequency signals are also more likely to overlap with the narrower low frequency calls of mysticetes, many non-communication cues related to fish and invertebrate prey, and geologic sounds that inform navigation. However, the area in which masking would occur for all marine mammal species and stocks (*e.g.*, predominantly in the vicinity of the foundation pile being driven) is small relative to the extent of habitat used by each species and stock. As mentioned above, the project area does not overlap critical habitat for any species, and temporary avoidance of the pile driving area by marine mammals would likely displace animals to areas of sufficient habitat.

In summary, the nature of the specified activities, paired with habitat use patterns by marine mammals, makes it unlikely that the level of masking that could occur would have the potential to affect reproductive success or survival.

Impacts on Habitat and Prey

Construction activities (*i.e.*, foundation installation) may result in fish and invertebrate mortality or injury very close to the source, and all of the specified activities may cause some fish to leave the area of disturbance. It is anticipated that any mortality or injury would be limited to a very small subset of available prey and the implementation of mitigation measures such as the use of a NAS during foundation installation would further limit the degree of impact. Behavioral changes in prey in response to construction activities could temporarily impact marine mammals' foraging opportunities in a limited portion of the foraging range but, because of the relatively small area of the habitat that may be affected at any given time (*e.g.*, around a pile being driven), the impacts to marine mammal habitat are not expected to cause significant or long-term negative consequences.

Cable presence is not anticipated to impact marine mammal habitat as these would be buried, and any electromagnetic fields emanating from the cables are not anticipated to result in consequences that would impact marine mammals' prey to the extent they would be unavailable for consumption. Although many species of marine mammal prey can detect electromagnetic fields, previous studies have shown little impacts on habitat use

(Hutchinson *et al.*, 2018). The inclusion of protective shielding on cables will also minimize any impacts of electromagnetic fields on marine mammal prey.

The presence of wind turbines within the Lease Area could have longer-term impacts on marine mammal habitat, as the Project would result in the persistence of the structures within marine mammal habitat for more than 30 years. The presence of an extensive number of structures such as wind turbines are, in general, likely to result in local and broader oceanographic effects in the marine environment, and may disrupt dense aggregations and distribution of marine mammal zooplankton prey through altering the strength of tidal currents and associated fronts, changes in stratification, primary production, the degree of mixing, and stratification in the water column (Chen *et al.*, 2021; Johnson *et al.*, 2021; Christiansen *et al.*, 2022; Dorrell *et al.*, 2022). However, the scale of impacts is difficult to predict and may vary from hundreds of meters for local individual turbine impacts (Schultze *et al.*, 2020) to large-scale changes stretching hundreds of kilometers (Christiansen *et al.*, 2022).

As discussed in the "Potential Effects of the Specified Activities on Marine Mammals and their Habitat" section of the proposed rule, the Project would consist of no more than 119 foundations (114 WTGs, 4 OSSs, 1 Met tower) in the Lease Area, which will gradually become operational following construction completion. While there are likely to be oceanographic impacts from the presence of the Project, meaningful oceanographic impacts relative to stratification and mixing that would significantly affect marine mammal habitat and prey over large areas in key foraging habitats during the effective period of the regulations are not anticipated, nor is the project area located in the vicinity of any key marine mammal foraging areas. For these reasons, if oceanographic features are affected by the Project during the effective period of the regulations, the impact on marine mammal habitat and their prey is likely to be comparatively minor.

The Maryland Wind BiOp provided an evaluation of the presence and operation of the Project on, among other species, listed marine mammals and their prey. Overall, the BiOp concluded that impacts from loss of soft bottom habitat from the presence of turbines and placement of scour protection as well as any beneficial reef effects, are expected to be so small that they cannot be meaningfully measured, evaluated, or detected and are, therefore,

insignificant. The BiOp also concluded that while the presence and operation of the wind farm may change the distribution of plankton within the area of the wind farm locally, these changes are not expected to affect the oceanographic forces transporting zooplankton into the area. Regional distribution of plankton may vary from pre-wind facility conditions; however, given the lack of a known bathymetric feature that aggregates zooplankton prey in the lease area and acknowledging the information and uncertainty presented in the BiOp, the BiOp concluded that adverse effects on North Atlantic right whale foraging success due to near-field effects are not reasonably certain to occur. Relative to far-field effects (tens of kilometers from the outermost row of foundations in the Maryland Wind Lease Area), the BiOp does not anticipate disruption to conditions that would aggregate prey in or outside the Maryland Wind Energy Area (MD WEA) that would have significant effects on ESA listed species. This is due to the scale of the Project. Therefore, the BiOp concluded that an overall reduction in biomass of plankton is not an anticipated outcome of operating the Project. Thus, because broader changes in the biomass of zooplankton are not anticipated, any higher trophic level impacts are also not anticipated. That is, no effects to pelagic fish or benthic invertebrates that depend on plankton as forage food are expected to occur. Zooplankton, fish, and invertebrates are all considered marine mammal prey and, as fully described in the BiOp, measurable, detectable, or significant changes to marine mammal prey abundance and distribution from wind farm operation are not anticipated.

Mitigation To Reduce Impact on All Species

This rule includes an extensive suite of mitigation measures designed to minimize impacts on all marine mammals, with a focus on North Atlantic right whales. The Mitigation section discusses the manner in which the required mitigation measures reduce the magnitude and/or severity of the take of marine mammals. For impact pile driving of foundation piles, ten overarching mitigation measures are required: (1) seasonal work restrictions; (2) use of multiple PSOs to visually observe for marine mammals (with any detection within specifically designated zones triggering a delay or shutdown); (3) use of PAM to acoustically detect marine mammals, with a focus on detecting baleen whales (with any detection within designated zones triggering delay or shutdown); (4)

implementation of clearance zones; (5) implementation of shutdown zones; (6) use of soft-start; (7) use of noise attenuation technology; (8) maintaining situational awareness of marine mammal presence through the requirement that any marine mammal sighting(s) by US Wind's personnel must be reported to PSOs; (9) SFV monitoring; and (10) vessel strike avoidance measures to reduce the risk of a collision with a marine mammal and vessel. For HRG surveys, we are requiring six measures: (1) measures specifically for vessel strike avoidance; (2) specific requirements during daytime HRG surveys; (3) implementation of clearance zones; (4) implementation of shutdown zones; (5) use of ramp-up of acoustic sources; and (6) maintaining situational awareness of marine mammal presence through the requirement that any marine mammal sighting(s) by US Wind's personnel must be reported to PSOs.

For activities with large harassment isopleths, US Wind will be required to reduce the noise levels generated to the lowest levels practicable and will be required to ensure that they do not exceed a noise footprint above that which was modeled, assuming a 10-dB attenuation. Use of a soft-start during impact pile driving will allow animals to move away from (*i.e.*, avoid) the sound source prior to applying higher hammer energy levels needed to install the pile (US Wind will not use a hammer energy greater than necessary to install piles). Similarly, ramp-up during HRG surveys will allow animals to move away and avoid the acoustic sources before they reach their maximum energy level. For all activities, clearance zone and shutdown zone implementation, which are required when marine mammals are within given distances associated with certain impact thresholds for all activities, will reduce the magnitude and severity of marine mammal take. Additionally, the use of multiple PSOs (WTG, OSS, and Met tower foundation installation; HRG surveys), PAM (for impact foundation installation), and maintaining awareness of marine mammal sightings reported in the region during all specified activities will aid in detecting marine mammals that would trigger the implementation of the mitigation measures. The reporting requirements including SFV reporting (for foundation installation and foundation operation), will assist NMFS in identifying if impacts beyond those analyzed in this final rule are occurring, potentially leading to the need to enact adaptive management measures in

addition to or in place of the mitigation measures.

Mysticetes

Five mysticete species (comprising five stocks) of cetaceans (North Atlantic right whale, humpback whale, fin whale, sei whale, and minke whale) may be taken by harassment. These species, to varying extents, utilize the specified geographic region, including the project area, for the purposes of migration, foraging, and socializing. Mysticetes are in the low-frequency hearing group.

Behavioral data on mysticete reactions to pile-driving noise are scant. Kraus *et al.* (2019) predicted that the three main impacts of offshore wind farms on marine mammals would consist of displacement, behavioral disruptions, and stress. Broadly, we can look to studies that have focused on other noise sources such as seismic surveys and military training exercises, which suggest that exposure to loud signals can result in avoidance of the sound source (or displacement if the activity continues for a longer duration in a place where individuals would otherwise have been staying, which is less likely for mysticetes in this area), disruption of foraging activities (if they are occurring in the area), local masking around the source, associated stress responses, impacts to prey, and TTS or PTS (in some cases).

NMFS reviewed recent PSO observational data from offshore wind projects in southern New England (*i.e.*, South Fork at OCS-A-0517 and Vineyard Wind 1 at OCS-A-0501) where pile driving construction activities occurred. During pile-driving construction activities for Vineyard Wind 1, in 2023 from early June through December (RPS, 2023), there were 36 whale observations consisting of 4 unidentified non-North Atlantic right whales, 17 detections of humpback whales, eight detections of fin whales, six detections of minke whales, and one unidentified baleen whale (RPS, 2023). Three of these observations of mysticetes (one humpback whale sighting, one fin whale sighting, and one group of three fin whales) occurred while the hammer was engaged (which was operating at full power). Behaviors noted included surfacing, blowing, fluking, and feeding. At South Fork, a total of 39 hours 32 minutes of active impact pile driving was conducted across installation of the 13 monopiles on 15 different days. The most PSO visual watch effort occurred aboard the Bokalift 2 (908 hours), and PSO effort from the four dedicated monitoring vessels ranged from 426 to 757 hours. In

total (with and without pile driving) foundation installation PSOs observed 348 mysticete groups comprising 552 individuals; 29 of these detections, totaling 51 individuals, occurred during pile driving (table 14 in South Fork Wind (2023)). South Fork's Trained Lookouts confirmed two separate sightings of individual NARWs during vessel transits in support of offshore construction-related activities during the reporting period. Each animal was observed opportunistically during non-transit periods when vessels were not underway. None of the observed behaviors of mysticetes noted by either the Vineyard Wind 1 or South Fork PSOs were indicative of distress, alarm, or other adverse reactions (RPS, 2023; South Fork Wind, 2023).

Mysticetes encountered in the project area are expected to primarily be migrating and, to a lesser degree, may be engaged in foraging behavior. The extent to which an animal engages in these behaviors in the area is species-specific and varies seasonally. Many mysticetes are expected to predominantly be migrating through the project area towards or from feeding grounds located further north (*e.g.*, southern New England region, Gulf of Maine, Canada). While we acknowledged above that mortality, hearing impairment, or displacement of mysticete prey species may result locally from impact pile driving, given the very short duration of and broad availability of prey species in the area and the availability of alternative suitable foraging habitat for the mysticete species most likely to be affected, any impacts on mysticete foraging is expected to be minor. Whales temporarily displaced from the project area are expected to have sufficient remaining feeding habitat available to them and would not be prevented from feeding in other areas within the biologically important feeding habitats found further north. In addition, any displacement of whales or interruption of foraging bouts would be expected to be relatively temporary in nature.

The potential for repeated exposures is dependent upon the residency time of whales with migratory animals unlikely to be exposed on repeated occasions and animals remaining in the area to be more likely exposed repeatedly. For mysticetes, where relatively low amounts of species-specific take by Level B harassment are predicted (compared to the abundance of each mysticete species or stock, such as is indicated in table 22) and movement patterns suggest that individuals would not necessarily linger in a particular area for multiple days, each predicted take likely represents an exposure of a

different individual; the behavioral impacts would, therefore, be expected to occur within a single day within a year—an amount that NMFS would not expect to impact reproduction or survival. Species with longer residence time in the project area may be subject to repeated exposures across multiple days.

In general, for this Project, the duration of exposures will not be continuous throughout any given day, and pile driving will not occur on all consecutive days within a given year due to weather delays or any number of logistical constraints US Wind has identified. Species-specific analysis regarding potential for repeated exposures and impacts is provided below.

Fin, humpback, minke, and sei whales are the only mysticete species for which PTS is anticipated and authorized. As described previously, PTS for mysticetes from some Project activities may overlap frequencies used for communication, navigation, or detecting prey. However, given the recent data from VW1 and South Fork, the nature and duration of the activity, the mitigation measures, and likely avoidance behavior, any PTS is expected to be of a small degree, would be limited to frequencies where pile-driving noise is concentrated (*i.e.*, only a small subset of their expected hearing range) and would not be expected to impact reproductive success or survival.

North Atlantic Right Whale

North Atlantic right whales are listed as endangered under the ESA and as both a depleted and strategic stock under the MMPA. As described in the “Potential Effects to Marine Mammals and Their Habitat” section of the proposed rule, North Atlantic right whales are threatened by a low population abundance, higher than average mortality rates, and lower than average reproductive rates. Recent studies have reported individuals showing high stress levels (*e.g.*, Corkeron *et al.*, 2017) and poor health, which has further implications on reproductive success and calf survival (Christiansen *et al.*, 2020; Stewart *et al.*, 2021; Stewart *et al.*, 2022). As described below, a UME has been designated for North Atlantic right whales. Given this, the status of the North Atlantic right whale population is of heightened concern and, therefore, merits additional analysis and consideration. No Level A harassment, serious injury, or mortality is anticipated or may be authorized for this species.

For North Atlantic right whales, this rule may allow up to ten takes to be

authorized, by Level B harassment only, over the 5-year period, with a maximum annual allowable take by Level B harassment of four (equating to approximately 1.18 percent of the stock abundance, if each take were considered to be of a different individual). The project area is known as a migratory corridor for North Atlantic right whales and given the nature of migratory behavior (*e.g.*, continuous path), as well as the very low number of total takes, we do not anticipate that any of the instances of take would represent repeat takes of any individual, though it could occur if whales are engaged in opportunistic foraging behavior. Barco *et al.* (2015) observed North Atlantic right whales engaging in open mouth behavior, north of the project area in Virginia coastal waters which is suggestive, though not necessarily indicative, of feeding. While opportunistic foraging may occur in the project area, the area does not support prime foraging habitat.

The highest density of North Atlantic right whales in the project area occurs in the winter (table 6). The Mid-Atlantic, including the project area, may be a stopover site for migrating North Atlantic right whales moving to or from southeastern calving grounds. North Atlantic right whales have been acoustically detected in the vicinity of the project area year-round (Bailey *et al.*, 2018) with the highest occurrences documented during late winter/early spring. Similarly, the waters off the coast of Maryland, including those surrounding the project area in the MD WEA, have documented North Atlantic right whale presence as the area is an important migratory route for the species to the northern feeding areas near the Gulf of Maine and Georges Banks and to their southern breeding and calving grounds off the southeastern United States (CETAP, 1982; LaBrecque *et al.*, 2015; Salisbury *et al.*, 2016; Davis *et al.*, 2017). However, comparatively, the project area is not known as an important area for feeding, breeding, or calving.

North Atlantic right whales range outside the project area for their main feeding, breeding, and calving activities (Hayes *et al.*, 2023). Additional qualitative observations include animals feeding and socializing in New England waters, north of the MD WEA (Quintana-Rizzo *et al.*, 2021). The North Atlantic right whales observed north of the MD WEA were primarily concentrated in the northeastern and southeastern sections of the Massachusetts WEA (MA WEA) during the summer (June–August) and winter (December–February). North Atlantic

right whale distribution shifted to the west into the Rhode Island/Massachusetts (RI/MA) WEA in the spring (March–May). Quintana-Rizzo *et al.* (2021) found that approximately 23 percent of the right whale population was present from December through May, and the mean residence time tripled to an average of 13 days during these months. The MD WEA is not in or near these areas important to feeding, breeding, and calving activities.

In general, North Atlantic right whales in the project area are expected to be engaging in migratory behavior. Given the species’ migratory behavior in the project area, we anticipate individual whales would be typically migrating through the area during most months when foundation installation would occur (given the seasonal restrictions on foundation installation, rather than lingering for extended periods of time). Other work that involves much smaller harassment zones (*e.g.*, HRG surveys) may also occur during periods when North Atlantic right whales are using the habitat for migration. It is important to note the activities occurring from December through May that may impact North Atlantic right whale would be HRG surveys which are planned to take place during years 2 and 3 for only 14 days each year from April through June and would not result in very high received levels. Across all years, if an individual were to be exposed during a subsequent year, the impact of that exposure is likely independent of the previous exposure given the duration between exposures.

As described in the Description of Marine Mammals in the Geographic Area of Specified Activities, North Atlantic right whales are presently experiencing an ongoing UME (beginning in June 2017). Preliminary findings support human interactions, specifically vessel strikes and entanglements, as the cause of death for the majority of North Atlantic right whales. Given the current status of the North Atlantic right whale, the loss of even one individual could significantly impact the population. No mortality, serious injury, or injury of North Atlantic right whales as a result of the Project is expected or may be authorized. Any disturbance to North Atlantic right whales due to US Wind’s activities is expected to result in only temporary avoidance of the immediate area of construction. As no injury, serious injury, or mortality is expected or may be authorized, and Level B harassment of North Atlantic right whales will be reduced to the level of least practicable adverse impact through

use of mitigation measures, the number of takes of North Atlantic right whales to be authorized would not exacerbate or compound the effects of the ongoing UME.

As described in the general *Mysticetes* section above, foundation installation is likely to result in the highest amount of annual take and is of greatest concern given loud source levels. This activity would likely be limited to up to 119 days (114 for WTG monopile foundations, 4 days for OSS jacket foundations, and 1 day for Met tower pin pile foundations) over a maximum of 3 years, during times when, based on the best available scientific data, North Atlantic right whales are less frequently encountered due to their migratory behavior. The potential types, severity, and magnitude of impacts are also anticipated to mirror that described in the general *Mysticetes* section above, including avoidance (the most likely outcome), changes in foraging or vocalization behavior, masking, a small amount of TTS, and temporary physiological impacts (e.g., change in respiration, change in heart rate). Importantly, the effects of the specified activities are expected to be sufficiently low-level and localized to specific areas as to not meaningfully impact important behaviors, such as migratory behavior of North Atlantic right whales. These takes are expected to result in temporary behavioral reactions, such as slight displacement (but not abandonment) of migratory habitat or temporary cessation of feeding. Further, given these exposures are generally expected to occur to different individual right whales migrating through (i.e., most individuals would not be expected to be impacted on more than 1 day in a year), they are unlikely to result in energetic consequences that could affect reproduction or survival of any individuals.

Overall, NMFS expects that any behavioral harassment of North Atlantic right whales incidental to the specified activities would not result in changes to their migration patterns or foraging success, as only temporary avoidance of an area during construction is expected to occur. As described previously, North Atlantic right whales migrating through the project area are not expected to remain in this habitat for extensive durations, and any temporarily displaced animals would be able to return to or continue to travel through and forage in these areas once activities have ceased.

Although acoustic masking may occur in the vicinity of the foundation installation activities, based on the acoustic characteristics of noise

associated with pile driving (e.g., frequency spectra, short duration of exposure) and construction surveys (e.g., intermittent signals), NMFS expects masking effects to be minimal (e.g., impact pile driving) to none (e.g., HRG surveys). In addition, masking would likely only occur during the period of time that a North Atlantic right whale is in the relatively close vicinity of pile driving, which is expected to be intermittent within a day, and confined to the months in which North Atlantic right whales are at lower densities and primarily moving through the area, anticipated mitigation effectiveness, and likely avoidance behaviors. TTS is another potential form of Level B harassment that could result in brief periods of slightly reduced hearing sensitivity affecting behavioral patterns by making it more difficult to hear or interpret acoustic cues within the frequency range (and slightly above) of sound produced during impact pile driving; however, any TTS would likely be of low amount, limited duration, and limited to frequencies where most construction noise is centered (below 2 kHz). NMFS expects that right whale hearing sensitivity would return to pre-exposure levels shortly after migrating through the area or moving away from the sound source.

As described in the “Potential Effects of Specified Activities on Marine Mammals and Their Habitat” section of the proposed rule, the distance of the receiver to the source influences the severity of response with greater distances typically eliciting less severe responses. NMFS recognizes North Atlantic right whales migrating could be pregnant females (in the fall) and cows with older calves (in spring) and that these animals may slightly alter their migration course in response to any foundation pile driving; however, as described in the “Potential Effects of Specified Activities on Marine Mammals and Their Habitat” section of the proposed rule, we anticipate that course diversion would be of small magnitude. Hence, while some avoidance of the pile driving activities may occur, we anticipate any avoidance behavior of migratory North Atlantic right whales would be similar to that of gray whales (Tyack *et al.*, 1983), on the order of approximately hundreds of meters up to 1 to 2 km. This diversion from a migratory path otherwise uninterrupted by the planned activities is not expected to result in meaningful energetic costs that would impact annual rates of recruitment or survival. NMFS expects that North Atlantic right whales would be able to avoid areas

during periods of active noise production while not being forced out of this portion of their habitat.

North Atlantic right whale presence in the project area is year-round. However, abundance during summer months is lower compared to the winter months with spring and fall serving as “shoulder seasons” wherein abundance waxes (fall) or wanes (spring). Given this year-round habitat usage, in recognition that where and when whales may actually occur during Project activities is unknown as it depends on the annual migratory behaviors, US Wind has proposed, and NMFS is requiring a suite of mitigation measures designed to reduce impacts to North Atlantic right whales to the maximum extent practicable. These mitigation measures (e.g., seasonal/daily work restrictions, vessel separation distances, reduced vessel speed) will not only avoid the likelihood of vessel strikes but also will minimize the severity of behavioral disruptions by minimizing impacts (e.g., through sound reduction using attenuation systems and reduced temporal overlap of Project activities and North Atlantic right whales). This will further ensure that the number of takes by Level B harassment that are estimated to occur are not expected to affect reproductive success or survivorship by detrimental impacts to energy intake or cow/calf interactions during migratory transit. However, even in consideration of recent habitat-use and distribution shifts, US Wind will still be installing foundations when the presence of North Atlantic right whales is expected to be lower.

As described in the Description of Marine Mammals in the Geographic Area of Specified Activities section, the Project will be constructed within the North Atlantic right whale migratory corridor BIA, which represent areas and months within which a substantial portion of a species or population is known to migrate. The area over which North Atlantic right whales may be harassed is relatively small compared to the width of the migratory corridor. The width of the migratory corridor, at the widest point across the corridor, offshore of Maryland where the corridor overlaps the Lease Area is approximately 163.8 km while the width of the Lease Area, at the longest point, is approximately 33.1 km. North Atlantic right whales may be displaced from their normal path and preferred habitat in the immediate activity area (primarily from pile driving activities), however, we do not anticipate displacement to be of high magnitude (e.g., beyond a few kilometers); thereby,

any associated bio-energetic expenditure is anticipated to be small. There are no known North Atlantic right whale feeding, breeding, or calving areas within the project area. Prey species are mobile (*e.g.*, calanoid copepods can initiate rapid and directed escape responses) and are broadly distributed throughout the project area (noting again that North Atlantic right whale prey is not particularly concentrated in the project area relative to more northern foraging habitats). Therefore, any impacts to prey that may occur are also unlikely to impact marine mammals.

The most significant measure to minimize impacts to individual North Atlantic right whales is the seasonal moratorium on all foundation installation activities from December 1 through April 30, when North Atlantic right whale abundance in the project area is expected to be highest. NMFS also expects this measure to greatly reduce the potential for mother-calf pairs to be exposed to impact pile driving noise above the Level B harassment threshold during their annual spring migration through the project area from calving grounds to primary foraging grounds (*e.g.*, Cape Cod Bay). NMFS expects that exposures to North Atlantic right whales will be reduced due to the additional required mitigation measures that would ensure that any exposures above the Level B harassment threshold would result in only short-term effects to individuals exposed.

Pile driving may only begin in the absence of North Atlantic right whales (based on visual and passive acoustic monitoring). If pile driving has commenced, NMFS anticipates North Atlantic right whales would avoid the area, utilizing nearby waters to carry on pre-exposure behaviors. However, foundation installation activities must be shut down if a North Atlantic right whale is sighted at any distance unless a shutdown is not feasible due to risk of injury or loss of life or pile refusal or instability. NMFS anticipates that if North Atlantic right whales go undetected and they are exposed to foundation installation noise, it is unlikely a North Atlantic right whale would approach the sound source locations to the degree that they would expose themselves to very high noise levels. This is because typical observed whale behavior demonstrates likely avoidance of harassing levels of sound where possible (Richardson *et al.*, 1985). These measures are designed to avoid PTS and also reduce the severity of Level B harassment, including the potential for TTS. While some TTS

could occur, given the required mitigation measures (*e.g.*, delay pile driving upon a sighting or acoustic detection and shutting down upon a sighting or acoustic detection), the potential for TTS to occur is low and any TTS that may occur would likely be of low degree and with recovery occurring quickly.

The required clearance and shutdown measures are most effective when detection efficiency is maximized, as the measures are triggered by a sighting or acoustic detection. To maximize detection efficiency, US Wind proposed, and NMFS is requiring, the combination of PAM and visual observers. NMFS is requiring communication protocols with other Project vessels, and other heightened awareness efforts (*e.g.*, daily monitoring of North Atlantic right whale sighting databases) such that as a North Atlantic right whale approaches the source (and thereby could be exposed to higher noise energy levels), PSO detection efficacy would increase, the whale would be detected, and a delay to commencing foundation installation or shutdown (if feasible) would occur. In addition, the implementation of a soft-start for impact pile driving would provide an opportunity for whales to move away from the source if they are undetected, reducing received levels.

For HRG surveys, the maximum distance to the Level B harassment threshold is 200 m. The estimated take, by Level B harassment only, associated with HRG surveys is to account for any North Atlantic right whale sightings PSOs may miss when HRG acoustic sources are active. However, because of the relatively short maximum distance to the Level B harassment threshold, the requirement that vessels maintain a distance of 500 m from any North Atlantic right whales, the fact that whales are unlikely to remain in close proximity to an HRG survey vessel for any length of time, and that the acoustic source would be shut down if a North Atlantic right whale is observed within 500 m of the source, any exposure to noise levels above the harassment threshold (if any) would be very brief. To further minimize exposures, ramp-up of sub-bottom profilers must be delayed during the clearance period if PSOs detect a North Atlantic right whale (or any other ESA-listed species) within 500 m of the acoustic source. With implementation of the required mitigation measures, take by Level A harassment is unlikely and, therefore, not authorized. Potential impacts associated with Level B harassment would include low-level, temporary behavioral modifications, most likely in

the form of avoidance behavior. Given the high level of precautions taken to minimize both the amount and intensity of Level B harassment on North Atlantic right whales, it is unlikely that the anticipated low-level exposures would lead to reduced reproductive success or survival.

As described above, no serious injury or mortality, or Level A harassment, of North Atlantic right whale is anticipated or may be authorized. Extensive North Atlantic right whale-specific mitigation measures (beyond the robust suite required for all species) are expected to further minimize the amount and severity of Level B harassment. Given the documented habitat use within the area, the majority of the individuals predicted to be taken (including no more than ten instances of take, by Level B harassment only, over the course of the 5-year rule, with an annual maximum of no more than four) would be impacted on only 1, or maybe 2, days in a year as North Atlantic right whales utilize this area for migration and would be transiting rather than residing in the area for extended periods of time. Further, any impacts to North Atlantic right whales are expected to be in the form of lower-level behavioral disturbance.

Given the magnitude and severity of the impacts discussed above, and in consideration of the required mitigation and other information presented, US Wind's activities are not expected to result in impacts on the reproduction or survival of any individuals, much less affect annual rates of recruitment or survival. For these reasons, we have determined that the take (by Level B harassment only) anticipated and to be authorized would have a negligible impact on the North Atlantic right whale.

Fin Whale

The fin whale is listed as Endangered under the ESA, and the western North Atlantic stock is considered both Depleted and Strategic under the MMPA. No UME has been designated for this species or stock. No serious injury or mortality is anticipated or may be authorized for this species.

This rule would allow for the authorization of up to 41 takes, by Level A harassment and Level B harassment, over the 5-year period. The maximum annual allowable take by Level A harassment and Level B harassment, would be 2 and 18, respectively (combined, this annual take (n=20) equates to approximately 0.29 percent of the stock abundance if each take were considered to be of a different individual). The project area does not

overlap with any known areas of specific biological importance to fin whales. It is possible that some subset of the individual whales exposed could be taken several times annually.

Level B harassment is expected to be in the form of behavioral disturbance, primarily resulting in avoidance of the project area where foundation installation is occurring, and some low-level TTS and masking that may limit the detection of acoustic cues for relatively brief periods of time. Any potential PTS would be minor (limited to a few dB) and any TTS would be of short duration and concentrated at one-half or one octave above the frequency band of pile driving noise (most sound is below 2 kHz) which does not include the full predicted hearing range of fin whales. If TTS is incurred, hearing sensitivity would likely return to pre-exposure levels relatively shortly after exposure ends. Any masking or physiological responses would also be of low magnitude and severity for reasons described above. Level B harassment would be temporary, with primary impacts being temporary displacement of the project area but not abandonment of any migratory or foraging behavior. There is no known foraging habitat for fin whales within the project area. Any fin whales in the project area would be expected to be migrating through the area and would have sufficient space to move away from Project activities.

Fin whales are frequently observed in the waters off of Maryland and are one of the most commonly detected large baleen whales in continental shelf waters, principally from Cape Hatteras in the Mid-Atlantic northward to Nova Scotia, Canada (CETAP, 1982; Hain *et al.*, 1992; BOEM 2012; Barco *et al.*, 2015; Edwards *et al.*, 2015; Bailey *et al.*, 2018; Hayes *et al.*, 2023). Fin whales have high relative abundance in the Mid-Atlantic and project area, and most observations occur in the winter and early spring months (Williams *et al.*, 2015d; Barco *et al.*, 2015), with larger group sizes occurring during the winter months (Barco *et al.*, 2015). However, fin whales typically feed in waters off of New England and within the Gulf of Maine, areas north of the project area, as New England and Gulf of St. Lawrence waters represent major feeding ground for fin whales (Hayes *et al.*, 2023). Hain *et al.* (1992) based on an analysis of neonate stranding data, suggested that calving takes place during October to January in latitudes of the U.S. mid-Atlantic region; however, it is unknown where calving, mating, and wintering occur for most of the population (Hayes *et al.*, 2023).

Given the documented habitat use within the area, some of the individuals taken may be exposed on multiple days. However, as described, the project area does not include areas where fin whales are known to concentrate for feeding or reproductive behaviors and the predicted takes are expected to be in the form of lower-level impacts. Given the magnitude and severity of the impacts discussed above (including no more than 18 takes, by Level A harassment and Level B harassment, over the course of the 5-year rule, and a maximum annual allowable take by Level A harassment and Level B harassment, of 2 and 18 respectively), and in consideration of the required mitigation and other information presented, US Wind's activities are not expected to result in impacts on the reproduction or survival of any individuals, much less affect annual rates of recruitment or survival. For these reasons, we have determined that the take (by Level A harassment and Level B harassment) anticipated and to be authorized would have a negligible impact on the western North Atlantic stock of fin whales.

Humpback Whale

The West Indies DPS of humpback whales is not listed as threatened or endangered under the ESA, but the Gulf of Maine stock, which includes individuals from the West Indies DPS, is considered Strategic under the MMPA. However, as described in the Description of Marine Mammals in the Geographic Area of Specified Activities, humpback whales along the Atlantic Coast have been experiencing an active UME as elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through Florida since January 2016. Of the cases examined, approximately 40 percent had evidence of human interaction (vessel strike or entanglement). The UME does not yet provide cause for concern regarding population-level impacts and take from vessel strike and entanglement would not be authorized. Despite the UME, the relevant population of humpback whales (the West Indies breeding population, or DPS, of which the Gulf of Maine stock is a part) remains stable at approximately 12,000 individuals.

This final rule would allow for the authorization of up to 36 takes, by Level A harassment and Level B harassment, over the 5-year period. The maximum annual allowable take by Level A harassment and Level B harassment would be 2 and 16, respectively (combined, this maximum annual take (n=18) equates to approximately 1.29 percent of the stock abundance if each

take were considered to be of a different individual). Given that humpback whales are known to forage in areas just south of Maryland during the winter and could potentially be foraging off Maryland during this time as well, it is likely that some subset of the individual whales exposed could be taken several times annually.

Among the activities analyzed, impact pile driving is likely to result in the highest amount of Level A harassment annual take of (n=2) humpback whales. The maximum amount of annual take to be authorized (n=14), by Level B harassment, is highest for impact pile driving.

As described in the Description of Marine Mammals in the Geographic Area of Specified Activities section, humpback whales are known to occur regularly throughout the Mid-Atlantic Bight, including Maryland waters, with strong seasonality of peak occurrences during winter and spring (Barco *et al.*, 2015; Bailey *et al.*, 2018; Hayes *et al.*, 2023).

In the western North Atlantic, humpback whales feed during spring, summer, and fall over a geographic range encompassing the eastern coast of the United States. Feeding is generally considered to be focused in areas north of the project area, including a feeding BIA in the Gulf of Maine/Stellwagen Bank/Great South Channel, but has been documented farther south and off the coast of Virginia. When foraging, humpback whales tend to remain in the area for extended durations to capitalize on the food sources.

Assuming humpback whales who are feeding in waters within or surrounding the project area behave similarly, we expect that the predicted instances of disturbance could be comprised of some individuals that may be exposed on multiple days if they are utilizing the area as foraging habitat. Also similar to other baleen whales, if migrating, individuals would likely be exposed to noise levels from the Project above the harassment thresholds only once during migration through the project area.

For all the reasons described in the *Mysticetes* section above, we anticipate any potential PTS and TTS would be concentrated at one-half or one octave above the frequency band of pile driving noise (most sound is below 2 kHz) which is lower than the full predicted hearing range of humpback whales. If TTS is incurred, hearing sensitivity would likely return to pre-exposure levels relatively shortly after exposure ends. Any masking or physiological responses would also be of low magnitude and severity for reasons described above. Limited foraging

habitat exists for humpback whales within the project area as their main foraging habitat is located further north. Any humpback whales in the project area would more likely be migrating through the area.

Given the magnitude and severity of the impacts discussed above (including no more than 36 humpback whale takes over the course of the 5-year rule, a maximum annual allowable take by Level A harassment and Level B harassment, of 2 and 16, respectively), and in consideration of the required mitigation measures and other information presented, US Wind's activities are not expected to result in impacts on the reproduction or survival of any individuals, much less affect annual rates of recruitment or survival. For these reasons, we have determined that the take by harassment anticipated and to be authorized would have a negligible impact on the Gulf of Maine stock of humpback whales.

Minke Whale

Minke whales are not listed under the ESA, and the Canadian east coast stock is neither considered Depleted nor Strategic under the MMPA. There are no known areas of specific biological importance in or adjacent to the project area. As described in the Description of Marine Mammals in the Geographic Area of Specified Activities, a UME has been designated for this species but is pending closure. No serious injury or mortality is anticipated or may be authorized for this species.

This final rule would allow for the authorization of up to 67 minke whale takes, by Level A harassment and Level B harassment, over the 5-year period. The maximum annual allowable take by Level A harassment and Level B harassment, would be 6 and 41, respectively (combined, this annual take (n=47) equates to approximately 0.21 percent of the stock abundance if each take were considered to be of a different individual). As described in the Description of Marine Mammals in the Geographic Area of Specified Activities section, minke whales are common offshore the U.S. eastern seaboard with a strong seasonal component in the continental shelf and in deeper, off-shelf waters (CETAP, 1982; Hayes *et al.*, 2023). In the project area, minke whales are predominantly migratory and their known feeding areas are north, including a feeding BIA in the southwestern Gulf of Maine and George's Bank. Therefore, they would be more likely to be moving through (with each take representing a separate individual), though it is possible that some subset of the individual whales

exposed could be taken up to a few times annually.

As described in the Description of Marine Mammals in the Geographic Area of Specified Activities section, there is a UME for minke whales along the Atlantic Coast from Maine through South Carolina, with the highest number of deaths in Massachusetts, Maine, and New York, and preliminary findings in several of the whales have shown evidence of human interactions or infectious diseases. However, we note that the population abundance is greater than 21,000 and the take to be authorized through this action is not expected to exacerbate the UME in any way.

We anticipate the impacts of this harassment to follow those described in the general *Mysticetes* section above. Any potential PTS would be minor (limited to a few dB) and any TTS would be of short duration and concentrated at one-half or one octave above the frequency band of pile driving noise (most sound is below 2 kHz) which does not include the full predicted hearing range of minke whales. If TTS is incurred, hearing sensitivity would likely return to pre-exposure levels relatively shortly after exposure ends. Any masking or physiological responses would also be of low magnitude and severity for reasons described above. Level B harassment would be temporary, with primary impacts being temporary displacement of the project area but not abandonment of any migratory or foraging behavior. Limited foraging habitat for minke whales exists in the project area as major foraging habitats are located further north near New England. Any minke whales in the project area would be expected to migrate through the area and would have sufficient space to move away from Project activities.

Given the magnitude and severity of the impacts discussed above (including no more than 67 takes over the course of the 5-year rule, and a maximum annual allowable take by Level A harassment and Level B harassment, of 6 and 41, respectively), and in consideration of the required mitigation measures and other information presented, US Wind's activities are not expected to result in impacts on the reproduction or survival of any individuals, much less affect annual rates of recruitment or survival. For these reasons, we have determined that the take by harassment anticipated and to be authorized would have a negligible impact on the Canadian eastern coastal stock of minke whales.

Sei Whale

Sei whales are listed as Endangered under the ESA, and the Nova Scotia stock is considered both Depleted and Strategic under the MMPA. There are no known areas of specific biological importance in or adjacent to the project area and no UME has been designated for this species or stock. No serious injury or mortality is anticipated or may be authorized for this species.

This final rule would allow for the authorization of up to six takes, by Level A harassment and Level B harassment, over the 5-year period. The maximum annual allowable take by Level A harassment and Level B harassment, would be one and one, respectively (combined, this annual take (n=2) equates to approximately 0.03 percent of the stock abundance, if each take were considered to be of a different individual). As described in the Description of Marine Mammals in the Geographic Area of Specified Activities section, most of the sei whale distribution is concentrated in Canadian waters and seasonally in northerly U.S. waters, though they are uncommonly observed in the waters off of Maryland. Because sei whales are migratory and their known feeding areas are east and north of the project area (*e.g.*, there is a feeding BIA in the Gulf of Maine), they would be more likely to be moving through and, considering this and the very low number of total takes, it is unlikely that any individual would be exposed more than once within a given year.

With respect to the severity of those individual takes by behavioral Level B harassment, we would anticipate impacts to be limited to low-level, temporary behavioral responses with avoidance and potential masking impacts in the vicinity of the turbine installation to be the most likely type of response. Any potential PTS and TTS would likely be concentrated at one-half or one octave above the frequency band of pile driving noise (most sound is below 2 kHz) which is below the full predicted hearing range of sei whales. Moreover, any TTS would be of a small degree. Any avoidance of the project area due to the Project's activities would be expected to be temporary. There is no known foraging habitat that exists in the project area for sei whales. Any sei whales in the project area would be expected to be migrating through the area.

Given the magnitude and severity of the impacts discussed above (including no more than six takes over the course of the 5-year rule, and a maximum annual allowable take by Level A

harassment and Level B harassment, of one and one, respectively), and in consideration of the required mitigation measures and other information presented, US Wind's activities are not expected to result in impacts on the reproduction or survival of any individuals, much less affect annual rates of recruitment or survival. For these reasons, we have determined that the take by harassment anticipated and to be authorized would have a negligible impact on the Nova Scotia stock of sei whales.

Odontocetes

In this section, we include information here that applies to all of the odontocete species and stocks addressed below. Odontocetes include dolphins, porpoises, and all other whales possessing teeth, and we further divide them into the following subsections: sperm whales, small whales and dolphins, and harbor porpoise. These sub-sections include more specific information, as well as conclusions for each stock represented.

All of the takes of odontocetes that may be authorized incidental to US Wind's specified activities are by pile driving and HRG surveys. No serious injury or mortality is anticipated or may be authorized. We anticipate that, given ranges of individuals (*i.e.*, that some individuals remain within a small area for some period of time), and non-migratory nature of some odontocetes in general (especially as compared to mysticetes), these takes are more likely to represent multiple exposures of a smaller number of individuals than is the case for mysticetes, though some takes may also represent one-time exposures to an individual. Foundation installation is likely to disturb odontocetes to the greatest extent, compared to HRG surveys. While we expect animals to avoid the area during foundation installation, their habitat range is extensive compared to the area ensouffled during these activities.

As described earlier, Level B harassment may include direct disruptions in behavioral patterns (*e.g.*, avoidance, changes in vocalizations (from masking) or foraging), as well as those associated with stress responses or TTS. Odontocetes are highly mobile species and, similar to mysticetes, NMFS expects any avoidance behavior to be limited to the area near the sound source. While masking could occur during foundation installation, it would only occur in the vicinity of and during the duration of the activity and would not generally occur in a frequency range that overlaps most odontocete communication or any echolocation

signals. The mitigation measures (*e.g.*, use of sound attenuation systems, implementation of clearance and shutdown zones) would also minimize received levels such that the severity of any behavioral response would be expected to be less than exposure to unmitigated noise exposure.

Any masking or TTS effects are anticipated to be of low severity. First, the frequency range of pile driving, the most impactful activity that would be conducted in terms of response severity, falls within a portion of the frequency range of most odontocete vocalizations. However, odontocete vocalizations span a much wider range than the low-frequency construction activities planned for the Project. As described above, recent studies suggest odontocetes have a mechanism to self-mitigate (*i.e.*, reduce hearing sensitivity) the impacts of noise exposure, which could potentially reduce TTS impacts. Any masking or TTS is anticipated to be limited and would typically only interfere with communication within a portion of an odontocete's range and as discussed earlier, the effects would only be expected to be of a short duration and, for TTS, a relatively small degree.

Furthermore, odontocete echolocation occurs predominantly at frequencies significantly higher than low-frequency construction activities. Therefore, there is little likelihood that threshold shift would interfere with feeding behaviors. For HRG surveys, the sources operate at higher frequencies than foundation installation activities. However, sounds from these sources attenuate very quickly in the water column, as described above. Therefore, any potential for PTS and TTS and masking is very limited. Further, odontocetes (*e.g.*, common dolphins, spotted dolphins, bottlenose dolphins) have demonstrated an affinity to bow-ride actively surveying HRG surveys. Therefore, the severity of any harassment during HRG surveys, if it does occur, is anticipated to be very low in severity based on the lack of avoidance previously demonstrated by these species.

The waters off the coast of Maryland are used by several odontocete species. None of these species are listed under the ESA, and there are no known habitats of particular importance. In general, odontocete habitat ranges are far-reaching along the Atlantic coast of the United States, and the waters off of Maryland, including the project area, do not contain any unique odontocete habitat features.

Dolphins and Small Whales (Including Delphinids)

The 10 species and 11 stocks included in this group for which NMFS may authorize take are not listed under the ESA; however, short-finned pilot whales are listed as Strategic under the MMPA. There are no known areas of specific biological importance in or around the project area for any of these species and no UMEs have been designated for any of these species. No serious injury, mortality, or take by Level A harassment is anticipated or may be authorized for these species.

The 10 delphinid species for which NMFS may authorize take are: Atlantic spotted dolphin, Pantropical spotted dolphin, common bottlenose dolphin (coastal and northern migratory stocks), common dolphin, long-finned pilot whale, short-finned pilot whale, killer whale, rough-toothed dolphin, striped dolphin, and Risso's dolphin. This final rule would allow for the authorization of between 3 and 3,013 takes (depending on species), by Level B harassment only, over the 5-year period. The maximum annual allowable take for these species by Level B harassment, would range from 3 to 1,762, respectively (this annual take equates to approximately 0.07 to 24.0 percent of the stock abundance, depending on each stock, if each take were considered to be of a different individual).

For both stocks of bottlenose dolphins, given the comparatively higher number of total annual takes (1,591 for coastal and 1,768 for offshore) and the relative number of takes as compared to the stock abundance (24.0 and 2.81, respectively), primarily due to the progression of the location of impact pile driving each year, while some of the takes likely represent exposures of different individuals on 1 day a year, it is likely that some subset of the individuals exposed could be taken several times annually. For Atlantic spotted dolphins, Pantropical spotted dolphins, common dolphins, long- and short-finned pilot whales, killer whales, rough-toothed dolphins, striped dolphins, and Risso's dolphins, given the number of takes, while many of the takes likely represent exposures of different individuals on 1 day a year, some subset of the individuals exposed could be taken up to a few times annually.

Dolphins and small delphinids engage in social, reproductive, and foraging behavior in the waters offshore of Maryland. However, the number of takes, likely movement patterns of the affected species, and the intensity of any Level B harassment, combined with the

availability of alternate nearby habitat that supports the aforementioned behaviors suggests that the likely impacts would not impact the reproduction or survival of any individuals. While delphinids may be taken on several occasions, none of these species are known to have small home ranges within the project area or known to be particularly sensitive to anthropogenic noise. No Level A harassment (PTS) is anticipated or may be authorized. Some TTS could occur, but it would be limited to the frequency ranges of the activity and any loss of hearing sensitivity is anticipated to return to pre-exposure conditions shortly after the animals move away from the source or the source ceases.

Given the magnitude and severity of the impacts discussed above, and in consideration of the required mitigation and other information presented, US Wind's activities are not expected to result in impacts on the reproduction or survival of any individuals, much less affect annual rates of recruitment or survival. For these reasons, we have determined that the take by harassment anticipated and to be authorized would have a negligible impact on all of the species and stocks addressed in this section.

Harbor Porpoise

Harbor porpoises are not listed as Threatened or Endangered under the ESA, and the Gulf of Maine/Bay of Fundy stock is neither considered Depleted nor Strategic under the MMPA. The stock is found predominantly in northern U.S. coastal waters (less than 150 m depth) and up into Canada's Bay of Fundy (between New Brunswick and Nova Scotia). Although the population trend is not known, there are no UMEs or other factors that cause particular concern for this stock. No mortality or non-auditory injury are anticipated and may be authorized for this stock.

This final rule would allow for the authorization of up to 74 takes, by Level A harassment and Level B harassment, over the 5-year period. The maximum annual allowable take by Level A harassment and Level B harassment, would be 3 and 39, respectively (combined, this annual take (n=42) equates to approximately 0.04 percent of the stock abundance if each take were considered to be of a different individual). Given the number of takes, many of the takes likely represent exposures of different individuals on 1 day a year.

Regarding the severity of takes by Level B harassment, because harbor porpoises are particularly sensitive to

noise, it is likely that a fair number of the responses could be of a moderate nature, particularly to pile driving. In response to pile driving, harbor porpoises are likely to avoid the area during construction, as previously demonstrated in Tougaard *et al.* (2009) in Denmark, in Dahne *et al.* (2013) in Germany, and in Vallejo *et al.* (2017) in the United Kingdom, although a study by Graham *et al.* (2019) may indicate that the avoidance distance could decrease over time. Given that foundation installation is scheduled to occur off the coast of Maryland and, given alternative foraging areas nearby, any avoidance of the area by individuals is not likely to impact the reproduction or survival of any individuals.

With respect to PTS and TTS, the effects on an individual are likely relatively low given the frequency bands of pile driving (most energy below 2 kHz) compared to harbor porpoise hearing (150 Hz to 160 kHz peaking around 40 kHz). Specifically, TTS is unlikely to impact hearing ability in their more sensitive hearing ranges, or the frequencies in which they communicate and echolocate. We expect any PTS that may occur to be within the very low end of their hearing range where harbor porpoises are not particularly sensitive, and any PTS would affect a relatively small portion of the individual's hearing range. As such, any PTS would not interfere with key foraging or reproductive strategies necessary for reproduction or survival.

Harbor porpoises are seasonally distributed (Hayes *et al.*, 2023). During fall (October through December) and spring (April through June), harbor porpoises are widely dispersed from New Jersey to Maine, with lower densities farther north and south. During winter (January to March), intermediate densities of harbor porpoises can be found in waters off New Jersey to North Carolina, and lower densities are found in waters off New York to New Brunswick, Canada. In non-summer months they have been seen from the coastline to deep waters (>1800 m; Westgate *et al.*, 1998), although the majority are found over the continental shelf. While harbor porpoises are likely to avoid the area during any of the Project's construction activities, as demonstrated during European wind farm construction, the time of year in which work would occur is when harbor porpoises are not in highest abundance, and any work that does occur would not result in the species' abandonment of the waters off of Maryland.

Given the magnitude and severity of the impacts discussed above, and in

consideration of the required mitigation and other information presented, US Wind's activities are not expected to result in impacts on the reproduction or survival of any individuals, much less affect annual rates of recruitment or survival. For these reasons, we have determined that the take by harassment anticipated and to be authorized would have a negligible impact on the Gulf of Maine/Bay of Fundy stock of harbor porpoises.

Phocids (Harbor Seals, Gray Seals, and Harp Seals)

The harbor seal, gray seal, and harp seal are not listed under the ESA, and these stocks are not considered Depleted or Strategic under the MMPA. There are no known areas of specific biological importance in or around the project area. As described in the Description of Marine Mammals in the Geographic Area of Specified Activities section, a UME was designated for harbor seals and gray seals from June 20 through July 20, 2023 but has since been closed. No serious injury or mortality is anticipated or may be authorized for any seal species.

As limited occurrence data for seals are available for the project area, take estimates for harbor seals, gray seals, and harp seals are presented as one estimate. For the three seal species, this final rule would allow for the total authorization of up to 496 seals by Level B harassment, over the 5-year period. The maximum annual allowable take for these species, by Level B harassment, would be 341 seals. If all of the allocated take was attributed to gray seals, this take would equate to 1.25 percent of the gray seal stock abundance, if each take were considered to be of a different individual. If all of the allocated take was attributed to harbor seals, this take would equate to 0.56 percent of the harbor seal stock abundance, if each take were considered to be of a different individual. If all of the allocated take was attributed to harp seals, this take would equate to 0.004 percent of the harp seal stock abundance. Gray seals, harbor seals, and harp seals are considered migratory and none of these species have specific feeding areas that have been designated in the area, therefore, it is likely that takes of seals would represent exposures of different individuals throughout the Project duration.

Harp seals are considered extralimital in the project area, however, harp seal strandings have been documented in Maryland during the winter and spring (Hayes *et al.*, 2023; NAB, 2023a; NAB, 2023b). Harbor and gray seals occur in Maryland waters most often from late

winter to early spring, with harbor seal occurrences being more common than gray seals (Hayes *et al.*, 2023). Seals are more likely to be close to shore (*e.g.*, closer to the edge of the area ensouffed above NMFS' harassment threshold), such that exposure to foundation installation and HRG surveys would be expected to be at comparatively lower levels. Although a gray seal rookery may occur off the coast of Cape Henlopen, north of the project area, based on the distance of this area from the project area it is not expected that in-air sounds produced would cause the take of hauled out pinnipeds. As this is the closest documented pinniped haul-out to the project area, NMFS does not expect any harassment to occur, nor plans to authorize any take from in-air impacts on hauled out seals.

As described in the Potential Effects of Specified Activities on Marine Mammals and Their Habitat section, construction of wind farms in Europe resulted in pinnipeds temporarily avoiding construction areas but returning within short time frames after construction was complete (Carroll *et al.*, 2010; Hamre *et al.*, 2011; Hastie *et al.*, 2015; Russell *et al.*, 2016; Bresseur *et al.*, 2010). Effects on pinnipeds that are taken by Level B harassment in the project area would likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring). Most likely, individuals would simply move away from the sound source and be temporarily displaced from those areas (Lucke *et al.*, 2006; Edren *et al.*, 2010; Skeate *et al.*, 2012; Russell *et al.*, 2016). Given the low anticipated magnitude of impacts from any given exposure (*e.g.*, temporary avoidance), even potential repeated Level B harassment across a few days of some small subset of individuals, which could occur, is unlikely to result in impacts on the reproduction or survival of any individuals. Moreover, pinnipeds would benefit from the mitigation measures described in 50 CFR part 217—Regulations Governing the Taking and Importing of Marine Mammals Incidental to Specified Activities.

As described above, noise from pile driving is mainly low-frequency and, while any TTS that does occur would fall within the lower end of pinniped hearing ranges (50 Hz to 86 kHz), TTS would not occur at frequencies around 5 kHz, where pinniped hearing is most susceptible to noise-induced hearing loss (Kastelein *et al.*, 2018). No Level A harassment (PTS) is anticipated or may be authorized. In summary, any TTS would be of small degree and not occur

across the entire, or even most sensitive, hearing range. Hence, any impacts from TTS are likely to be of low severity and not interfere with behaviors critical to reproduction or survival.

Given the magnitude and severity of the impacts discussed above, and in consideration of the required mitigation and other information presented, US Wind's activities are not expected to result in impacts on the reproduction or survival of any individuals, much less affect annual rates of recruitment or survival. For these reasons, we have determined that the take by harassment anticipated and may be authorized would have a negligible impact on harbor, gray, and harp seals.

Negligible Impact Determination

No mortality or serious injury is anticipated to occur or may be authorized. As described in the analysis above, the impacts resulting from the Project's activities cannot be reasonably expected to, and are not reasonably likely to, adversely affect any of the species or stocks for which take may be authorized through effects on annual rates of recruitment or survival. Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat and taking into consideration the implementation of the required mitigation and monitoring measures, NMFS finds that the marine mammal take from all of US Wind's specified activities combined will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals estimated to be taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is less than one-third of the species or stock abundance, the take is considered to be of small numbers (86 FR 5322, January 19, 2021). Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The final rule allows for incidental take (by Level A harassment and/or Level B harassment) of 19 species of

marine mammal (with 20 managed stocks). The maximum number of instances of takes by combined Level A harassment and Level B harassment possible within any one year and that would be authorized relative to the best available population abundance is less than one-third for all species and stocks potentially impacted.

For 13 of these species (13 stocks), the allowable take by Level A and/or Level B harassment equates to less than 1 percent as compared to the stock abundance. For five stocks, the allowable take by Level A and/or Level B harassment equates to less than 5 percent as compared to the stock abundance, and for one stock the take by Level A and/or Level B harassment equates to just under 25 percent as compared to the stock abundance (coastal stock of bottlenose dolphins), assuming that each instance of take represents a different individual. Specific to the North Atlantic right whale, the maximum amount of take in any given year, which is by Level B harassment only, is four, or 1.18 percent of the stock abundance, assuming that each instance of take represents a different individual. Please see table 22 for information relating to this small numbers analysis.

Based on the analysis contained herein of the planned activities (including the required mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals would be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Classification

Endangered Species Act (ESA)

Section 7(a)(2) of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*) requires that each Federal agency ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the promulgation of rulemakings, NMFS

consults internally whenever we propose to authorize take for endangered or threatened species, in this case with the NOAA GARFO.

This final rule allows for the take of three marine mammal species listed under the ESA: North Atlantic right, fin, and sei whales. The Permits and Conservation Division requested initiation of section 7 consultation on December 5, 2023, with GARFO for the promulgation of the rulemaking. NMFS GARFO issued a BiOp on June 18, 2024, concluding that the promulgation of the rule and issuance of LOA thereunder is not likely to jeopardize the continued existence of threatened and endangered species under NMFS' jurisdiction and is not likely to result in the destruction or adverse modification of designated or proposed critical habitat. The BiOp is available at: <https://repository.library.noaa.gov/view/noaa/61632>.

US Wind is required to abide by these promulgated regulations, as well as the reasonable and prudent measure and terms and conditions of the BiOp and Incidental Take Statement, as issued by NMFS.

National Environmental Policy Act (NEPA)

To comply with NEPA (42 U.S.C. 4321 *et seq.*) and the NOAA Administrative Order 216–6A, NMFS must evaluate our proposed action (*i.e.*, promulgation of regulation) and alternatives with respect to potential impacts on the human environment. NMFS participated as a cooperating agency on the BOEM 2024 Final EIS (FEIS), which was finalized on, and is available at: <https://www.boem.gov/renewable-energy/state-activities/maryland-offshore-wind-final-environmental-impact-statement-eis>.

When acting as a cooperating agency, as is the case with this Project, NMFS may satisfy its independent NEPA obligations by either preparing a separate NEPA analysis for its issuance of an incidental take authorization or, if appropriate, by adopting the NEPA analysis prepared by the lead agency (40 CFR 1506.3(b)). In accordance with 40 CFR 1506.3, NMFS independently reviewed and evaluated the 2024 Maryland Offshore Wind FEIS and determined that it is adequate and sufficient to meet our responsibilities under NEPA for the promulgation of this rule and issuance of the associated LOA. NMFS, therefore, has adopted the 2024 Maryland Offshore Wind FEIS through a joint Record of Decision (ROD) with BOEM. The joint ROD for adoption of the 2024 Maryland Offshore Wind FEIS and promulgation of this final rule and subsequent issuance of a

LOA can be found at: <https://www.boem.gov/renewable-energy/state-activities/maryland-offshore-wind>.

Executive Order 12866

The Office of Management and Budget has determined that this rule is not significant for purposes of Executive Order 12866.

Regulatory Flexibility Act (RFA)

Under the Regulatory Flexibility Act (as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996; 5 U.S.C. 601 *et seq.*), whenever a Federal agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare, and make available for public comment, a regulatory flexibility analysis that describes the effect of the rule on small entities (*i.e.*, small businesses, small organizations, and small government jurisdictions) directly affected by the rule. However, no regulatory flexibility analysis is required if the head of an agency, or that person's designee, certifies that the rule will not have a significant economic impact on a substantial number of small entities. The Chief Counsel for Regulation for the Department of Commerce certified at the proposed rule stage that this rule would not have a significant economic impact on a substantial number of small entities. US Wind, the sole entity subject to these requirements, is not a small governmental jurisdiction, small organization or small business. We received no information that changes the factual basis of this certification. As a result, a regulatory flexibility analysis was not required and none was prepared.

Paperwork Reduction Act (PRA)

Notwithstanding any other provision of law, no person is required to respond to, nor shall a person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA unless that collection of information displays a currently valid Office of Management and Budget (OMB) control number. These requirements have been approved by OMB under control number 0648–0151 and include applications for regulations, subsequent LOA, and reports. Send comments regarding any aspect of this data collection, including suggestions for reducing the burden, to NMFS.

Coastal Zone Management Act (CZMA)

The CZMA requires Federal actions within and outside the coastal zone that have reasonably foreseeable effects on any coastal use or natural resource of

the coastal zone be consistent with the enforceable policies of a State's federally approved coastal management program (16 U.S.C. 1456(c)). NMFS has determined that US Wind's application for incidental take regulations is not an activity listed by the MD DNR pursuant to 15 CFR 930.53 and, thus, is not subject to Federal consistency requirements in the absence of the receipt and prior approval of an unlisted activity review request from the State by the Director of NOAA's Office for Coastal Management. Consistent with 15 CFR 930.54, NMFS published Notice of Receipt of US Wind's application for this incidental take regulation in the **Federal Register** on May 2, 2023 (88 FR 27453) and published the proposed rule on January 4, 2024 (89 FR 504). The State of Maryland did not request approval from the Director of NOAA's Office for Coastal Management to review US Wind's application as an unlisted activity, and the time period for making such request has expired. Therefore, NMFS has determined the ITA is not subject to Federal consistency review.

List of Subjects in 50 CFR Part 217

Administrative practice and procedure, Endangered and threatened species, Fish, Fisheries, Marine mammals, Penalties, Reporting and recordkeeping requirements, Wildlife.

Dated: September 26, 2024.

Samuel D. Rauch III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

PART 217—REGULATIONS GOVERNING THE TAKING AND IMPORTING OF MARINE MAMMALS INCIDENTAL TO SPECIFIED ACTIVITIES

■ 1. The authority citation for part 217 continues to read:

Authority: 16 U.S.C. 1361 *et seq.*, unless otherwise noted.

■ 2. Add subpart II, consisting of §§ 217.340 through 217.349, to read as follows:

Subpart II—Taking Marine Mammals Incidental to the Maryland Offshore Wind Project Offshore of Maryland

Sec.

- 217.340 Specified activity and specified geographical region.
- 217.341 Effective dates.
- 217.342 Permissible methods of taking.
- 217.343 Prohibitions.
- 217.344 Mitigation requirements.
- 217.345 Monitoring and reporting requirements.
- 217.346 Letter of Authorization.
- 217.347 Modifications of Letter of Authorization.

217.348–217.349 [Reserved]

Subpart II—Taking Marine Mammals Incidental to the Maryland Offshore Wind Project Offshore of Maryland

§ 217.340 Specified activity and specified geographical region.

(a) Regulations in this subpart apply to activities associated with the Maryland Offshore Wind Project (hereafter referred to as the “Project”) by US Wind, Inc. (hereafter referred to as “LOA Holder”), and those persons it authorizes or funds to conduct activities on its behalf in the area outlined in paragraph (b) of this section. Requirements imposed on LOA Holder must be implemented by those persons it authorizes or funds to conduct activities on its behalf.

(b) The specified geographical region is the Mid-Atlantic Bight, defined as waters from Cape Hatteras, North Carolina to Cape Cod, Massachusetts and extending into the west Atlantic to the 100-meter (m) isobath, and includes, but is not limited to, the Bureau of Ocean Energy Management (BOEM) Lease Area Outer Continental Shelf

(OCS)—A 0490 Commercial Lease of Submerged Lands for Renewable Energy Development, along the relevant Export Cable Corridors (ECC), and at the sea-to-shore transition points located within Delaware Seashore State Park.

(c) The specified activities are impact pile driving of wind turbine generator (WTG), offshore substation (OSS), and a meteorological tower (Met tower) foundations; high-resolution geophysical (HRG) site characterization surveys; vessel transit within the specified geographical region to transport crew, supplies, and materials; WTG and OSS operation; fishery and ecological monitoring surveys; placement of scour protection; and trenching, laying, and cable burial activities.

§ 217.341 Effective dates.

Regulations in this subpart are effective from January 1, 2025, through December 31, 2029.

§ 217.342 Permissible methods of taking.

Under the LOA, issued pursuant to §§ 216.106 of this chapter and 217.346, the LOA Holder, and those persons it

authorizes or funds to conduct activities on its behalf, may incidentally, but not intentionally, take marine mammals within the vicinity of BOEM Lease Area OCS—A 0490 Commercial Lease of Submerged Lands for Renewable Energy Development and associated cable corridor, provided the LOA Holder is in complete compliance with all terms, conditions, and requirements of the regulations in this subpart and the appropriate LOA:

(a) By Level B harassment associated with the acoustic disturbance of marine mammals by impact pile driving (WTG, OSS, and Met tower foundation installation) and HRG site characterization surveys.

(b) By Level A harassment associated with auditory injury of marine mammals by impact pile driving of WTG foundations.

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

(d) The incidental take of marine mammals by the activities listed in paragraphs (a) and (b) of this section is limited to the following species.

TABLE 1 TO PARAGRAPH (d)

Marine mammal species	Scientific name	Stock
North Atlantic right whale	<i>Eubalaena glacialis</i>	Western Atlantic.
Fin whale	<i>Balaenoptera physalus</i>	Western North Atlantic.
Humpback whale	<i>Megaptera novaeangliae</i>	Gulf of Maine.
Mink whale	<i>Balaenoptera acutorostrata</i>	Canadian Eastern Coastal.
Sei whale	<i>Balaenoptera borealis</i>	Nova Scotia.
Killer whale	<i>Orcinus orca</i>	Western North Atlantic.
Atlantic spotted dolphin	<i>Stenella frontalis</i>	Western North Atlantic.
Pantropical spotted dolphin	<i>Stenella attenuata</i>	Western North Atlantic.
Bottlenose dolphin	<i>Tursiops truncatus</i>	Western North Atlantic—Offshore. Northern Migratory Coastal.
Common dolphin	<i>Delphinus delphis</i>	Western North Atlantic.
Long-finned pilot whale	<i>Globicephala melas</i>	Western North Atlantic.
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	Western North Atlantic.
Risso’s dolphin	<i>Grampus griseus</i>	Western North Atlantic.
Rough-toothed dolphin	<i>Steno bredanensis</i>	Western North Atlantic.
Striped dolphin	<i>Stenella coeruleoalba</i>	Western North Atlantic.
Harbor porpoise	<i>Phocoena phocoena</i>	Gulf of Maine/Bay of Fundy.
Gray seal	<i>Halichoerus grypus</i>	Western North Atlantic.
Harbor seal	<i>Phoca vitulina</i>	Western North Atlantic.
Harp seal	<i>Pagophilus groenlandicus</i>	Western North Atlantic.

§ 217.343 Prohibitions.

Except for the takings described in § 217.342 and authorized by the LOA issued under this subpart, it is unlawful for any person to do any of the following in connection with the activities described in this subpart:

(a) Violate, or fail to comply with, the terms, conditions, and requirements of this subpart or the LOA issued under this subpart.

(b) Take any marine mammal not specified in § 217.342(d).

(c) Take any marine mammal specified in the LOA in any manner other than as specified in the LOA.

(d) Take any marine mammal specified in § 217.342(d), after National Marine Fisheries Service (NMFS) Office of Protected Resources determines such taking results in more than a negligible impact on the species or stocks of such marine mammals.

§ 217.344 Mitigation requirements.

When conducting the activities identified in § 217.340(c) within the

area described in § 217.340(b), LOA Holder must implement the mitigation measures contained in this section and any LOA issued under §§ 217.346 and 217.347. These mitigation measures include, but are not limited to:

(a) *General conditions.* LOA Holder must comply with the following general measures:

(1) A copy of any issued LOA must be in the possession of LOA Holder and its designees, all vessel operators, visual protected species observers (PSO), passive acoustic monitoring (PAM)

operators, pile driver operators, and any other relevant designees operating under the authority of the issued LOA;

(2) LOA Holder 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 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, LOA Holder 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 (DMA) 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 monitor these systems no less than every 4 hours;

(4) Any large whale observation by any project personnel or acoustic detection by a PAM operator must be conveyed to all vessel captains and on-duty PSOs. Any marine mammal observed by project personnel during pile driving must be conveyed to on-duty PSOs;

(5) 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;

(6) PSOs and PAM operators have the authority to call for a delay or shutdown to an activity, and LOA Holder must instruct all personnel regarding the authority of the PSOs and PAM operators. Any disagreements between a PSO, PAM operator, and the activity

operator regarding delays or shutdowns may only be discussed after the mitigative action has occurred;

(7) 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 or during a specified activity, the activity must be delayed or shut down, unless doing so 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;

(8) For in-water construction heavy machinery activities other than pile driving, if a marine mammal is on a path towards or comes within 10 m (32.8 feet (ft)) of equipment, LOA Holder 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;

(9) All vessels must be equipped with a properly installed, operational Automatic Identification System (AIS) device and LOA Holder must report all Maritime Mobile Service Identity (MMSI) numbers to NMFS Office of Protected Resources prior to commencing initial transits;

(10) By accepting the issued LOA, LOA Holder 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;

(11) 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; and

(12) The LOA Holder must also abide by the reasonable and prudent measures and terms and conditions of the Biological Opinion and Incidental Take Statement, as issued by NMFS, pursuant

to section 7 of the Endangered Species Act.

(b) *Vessel strike avoidance measures.* LOA Holder must comply with the following vessel strike avoidance measures while in the specified geographical region, unless a deviation is necessary to maintain safe maneuvering speed and justified because the vessel is in an area where oceanographic, hydrographic, and/or meteorological conditions severely restrict the maneuverability of the vessel; an emergency situation presents a threat to the health, safety, or life of a person; or when a vessel is actively engaged in emergency rescue or response duties, including vessel-in-distress or environmental crisis response. An emergency is defined as a serious event that occurs without warning and requires immediate action to avert, control, or remedy harm. Speed over ground will be used to measure all vessel speed restrictions.

(1) Prior to the start of the Project's activities involving vessels, all vessel personnel 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 Office of Protected Resources prior to vessel activities;

(2) LOA Holder, 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) LOA Holder'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. 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 paragraph (b)(1) of this section;

(4) LOA Holder 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 LOA Holder's vessels, regardless of size, must transit at 10 kn (11.5 mph) or less from November 1–April 30 in the specified geographic region;

(6) All LOA Holder's vessels, regardless of size, must travel 10 kn (11.5 mph) or less in any Seasonal Management Area (SMA) or active Slow Zones (*i.e.*, DMAs or acoustically triggered slow zone);

(7) LOA Holder'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 (b)(4) of this section) within 10 kilometers (km; 6.2 miles (mi)) of a transiting vessel(s), that vessel must operate at 10 knots (kn; 11.5 miles per hour (mph)) or less for 24 hours following the reported detection;

(8) LOA Holder'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) or large assemblages of cetaceans is observed within 500 m (1,640 ft) of an underway vessel;

(9) If LOA Holder'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 (or return), in addition to the required dedicated visual observer, LOA Holder 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 (11.5 mph) 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;

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

(11) LOA Holder'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). If a delphinid cetacean or pinniped is sighted within 50 m (164 ft) of a transiting vessel, LOA Holder's vessel must turn away from the animal(s), 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 LOA Holder'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). This measure does not apply to any vessel towing gear or any situation where respecting the relevant separation distance would be unsafe (*i.e.*, any situation where the vessel is navigationally constrained);

(13) LOA Holder's vessels underway must not divert or alter course to approach any marine mammal;

(14) LOA Holder must check, daily, for information regarding the establishment of mandatory or voluntary vessel strike avoidance areas (*i.e.*, DMAs, SMAs, Slow Zones) and any

information regarding North Atlantic right whale sighting locations; and

(15) LOA Holder must submit a Marine Mammal Vessel Strike Avoidance Plan to NMFS Office of Protected Resources for review and approval at least 180 days prior to the planned start of vessel activity if vessels will operate over 10 kn (11.5 mph). 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 (11.5 mph) or less. LOA Holder must comply with the approved Marine Mammal Vessel Strike Avoidance Plan.

(c) *WTG, OSS, Met tower foundation installation.* LOA Holder must comply with the following mitigation measures during impact pile driving activities associated with the installation of WTG, OSS, and Met tower foundations unless compliance is not practicable due to imminent risk of injury or loss of life to an individual, risk of damage to a vessel that creates risk of injury or loss of life for individuals, or the lead engineer determines there is risk of pile refusal or pile instability.

(1) Impact pile driving (*i.e.*, foundation and Met Tower installation) must not occur December 1 through April 30;

(2) Monopiles must be no larger than 11 m (36.1 ft) in diameter. No more than one monopile may be installed per day, unless otherwise approved in writing by NMFS. Pin piles for the OSSs must be no larger than 3 m in diameter. No more than four 3-m pin piles may be installed per day. Met tower pin piles must be no larger than 1.8 m in diameter. No more than two 1.8-m pin piles may be installed per day. The minimum amount of hammer energy necessary to effectively and safely install and maintain the integrity of the piles must be used. The impact hammer rating must not exceed 4,400 kJ;

(3) LOA Holder must not initiate pile driving earlier than 1 hour prior to civil sunrise or later than 1.5 hours prior to civil sunset, and may only continue pile driving into darkness if stopping operations represents a risk to human health, safety, and/or pile stability, unless the LOA Holder submits, and NMFS approves, an Alternative Monitoring Plan, which would allow pile driving to begin after daylight hours have ended. Until this is submitted, reviewed, and approved by NMFS, LOA Holder may not begin any new pile driving outside of the daylight hours previously defined in this subsection;

(4) 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. Soft-start involves initiating hammer operation at a reduced energy level (relative to full operating capacity) followed by a waiting period. The LOA Holder must comply with a soft-start protocol as described in the approved Pile Driving Plan;

(5) LOA Holder must implement clearance and shutdown zones, which must be measured using the radial distance around the pile being driven;

(6) LOA Holder must utilize PSO(s) and PAM operator(s), as described in § 217.345. At least three on-duty PSOs must be stationed and observing on the foundation installation vessel/platform. A minimum of three PSOs must be active on each of the two dedicated PSO vessels. On-duty 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. Concurrently, PAM operator(s) must be actively monitoring for marine mammals with PAM 60 minutes before, during, and 30 minutes after pile driving in accordance with a NMFS-approved PAM Plan;

(7) PSOs must visually monitor clearance zones for marine mammals for a minimum of 60 minutes prior to commencing pile driving. The entire minimum visibility zone must be visible (*i.e.*, not obscured by dark, rain, fog, *etc.*) for a full 60 minutes immediately prior to commencing pile driving. If PSOs cannot visually monitor the minimum visibility zone prior to foundation pile driving at all times, pile driving operations must not commence;

(8) All clearance zones must be confirmed to be free of marine mammals for 30 minutes immediately prior to the beginning of soft-start procedures. 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. PAM operators must immediately communicate all detections of marine mammals at any distance to the Lead PSO, including any determination regarding species identification,

distance, and bearing and the degree of confidence in the determination;

(9) For North Atlantic right whales, any visual observation or acoustic detection within the PAM monitoring zone 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. 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 nor acoustically detected for 30 minutes;

(10) 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 LOA Holder 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 shut down in one of these situations, LOA Holder 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) (see § 217.345);

(11) 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 LOA Holder must use the lowest hammer energy practicable to maintain stability;

(12) LOA Holder 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 and comply with the following measures:

(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 m³/(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. LOA Holder must provide NMFS Office of Protected Resources with a bubble curtain performance test and maintenance report for review. For piles for which thorough sound field verification (SFV) is carried out, this report must be submitted as soon as it is available but no later than when the thorough interim SFV report is submitted for the respective pile. Performance reports for piles with abbreviated SFV must be submitted with the weekly pile driving reports. Additionally, a full maintenance check (*e.g.*, manually clearing holes) must occur prior to each pile being installed. LOA Holder must develop and implement a maintenance plan that identifies the frequency of hose inspection, flushing, pressure tests, and re-drilling and that is designed to minimize the potential for sediment clogging to affect bubble curtain performance. Adjustments to the frequency of these maintenance steps must be made as necessary to ensure optimal performance of the bubble curtain system; and

(vi) Corrections to the bubble ring(s) to meet the performance standards in paragraph (c)(12) of this section must occur prior to impact pile driving of monopiles, 3-m (9.8 ft) pin piles, and 1.8-m (5.9 ft) pin piles. If LOA Holder uses a noise mitigation device in addition to the bubble curtain, LOA Holder must maintain similar quality control measures as described in this paragraph (c)(11) of this section.

(13) LOA Holder must implement PAM in accordance with the NMFS-

approved PAM Plan, as described in paragraph (c)(18) of this section. The PAM system components (*i.e.*, acoustic buoys) must not be placed closer than 1 km (3,280 ft) to the pile being driven so that the activities do not mask the PAM system. LOA Holder must demonstrate and prove 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 designed to detect all marine mammals to the maximum extent practicable, maximize baleen whale detections, and must be capable of detecting North Atlantic right whales within the PAM monitoring zone;

(14) LOA Holder must conduct thorough SFV measurements during pile driving activities associated with the installation of, at minimum, the first three monopile foundations, the first three full jacket foundations (inclusive of all pin piles for a specific jacket foundation), and the first foundation for any foundation scenarios that were modeled for the exposure analysis (*e.g.*, rated hammer energy, number of strikes, representative location) that does not fall into one of the previously listed categories for each of the three construction campaigns. Thorough SFV measurements must be conducted as follows:

(i) SFV 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 (2,460 ft) must be made. At each measurement location, there must be a near bottom and mid-water column hydrophone (measurement systems);

(ii) The recordings must be continuous throughout the duration of pile driving for 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, the signals prevent 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) LOA Holder 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; and

(vi) LOA Holder must submit interim SFV reports within 48 hours after each foundation is measured (see § 217.345(g) for interim and final reporting requirements).

(15) For thorough SFV on monopile and jacket foundations:

(i) During thorough SFV, installation of the next foundation (of the same type/foundation method) may not proceed until LOA Holder has reviewed the initial results from the thorough SFV and determined that there were no exceedances of any distances to the identified thresholds based on modeling assuming 10 dB attenuation. Subsequent SFV measurements are also required should larger piles be installed or if additional monopiles are driven that may produce louder sound fields than those previously measured (*e.g.*, higher hammer energy, greater number of strikes, *etc.*);

(ii) If any of the thorough SFV measurements from any foundation (monopile or jacket) indicate that the distances to the NMFS' marine mammal Level A harassment or Level B harassment thresholds for marine mammals (peak or cumulative) are greater than the modeled distances

(assuming 10 dB attenuation), before the next foundation is installed, LOA Holder must notify NMFS by email within 24 hours of reviewing the thorough SFV measurements as well as identify and propose for review and concurrence: additional, modified, and/or alternative noise attenuation measures or operational changes that present a reasonable likelihood of reducing sound levels to the modeled distances on subsequent foundations; provide a written explanation to NMFS Office of Protected Resources supporting that determination and requesting concurrence to proceed; and, following NMFS Office of Protected Resource's concurrence, deploy those additional measures or modifications on any subsequent foundation of the same pile type/installation methodology that are installed;

(iii) LOA Holder must also increase the clearance and shutdown zones for subsequent piles of the same type (*e.g.*, if triggered by SFV results for a monopile, for the next monopile) so that they are at least the size of the distances to those thresholds as indicated by SFV. For every 1,500 m that a marine mammal clearance or shutdown zone is expanded, additional PSOs must be deployed from additional platforms/vessels to ensure adequate and complete monitoring of the expanded shutdown and/or clearance zone. LOA Holder must deploy any additional PSOs consistent with the approved Marine Mammal Monitoring Plan in consideration of the size of the new zones and the species that must be monitored;

(iv) Following installation of a pile with additional, alternative, or modified noise attenuation measures or operational changes if thorough SFV results indicate that sound fields are within Level A harassment and B harassment thresholds, assuming 10 dB attenuation, thorough SFV must be conducted on two additional piles of the same type/installation method (for a total of at least three piles with consistent noise attenuation measures). If the thorough SFV results from all three of those piles are within the distances to isopleths of concern modeled assuming 10 dB attenuation, then LOA Holder must continue to implement the approved additional, alternative, or modified noise attenuation measures/operational changes. Use of the expanded clearance and shutdown zones must continue for additional piles until LOA Holder requests and receives concurrence from NMFS Office of Protected Resources and Greater Atlantic Regional Fisheries

Office (GARFO) to revert to the original clearance and shutdown zones;

(v) If, after all practicable measures that could be taken to reduce noise levels have been successfully implemented and exhausted, thorough SFV measurements continue to indicate that the distances to the marine mammal harassment thresholds are greater than those modeled assuming 10 dB attenuation, LOA Holder must consult with NMFS Office of Protected Resources to evaluate the circumstances before additional piles are installed; and

(vi) If, after additional measurements conducted pursuant to requirements of paragraph (14)(i) of this section, acoustic measurements indicate that ranges to the Level A harassment and Level B harassment thresholds are less than the ranges predicted by modeling (assuming 10-dB attenuation), LOA Holder may request a modification of the clearance and shutdown zones from the NMFS Office of Protected Resources. For NMFS Office of Protected Resources to consider a modification request for reduced zone sizes, LOA Holder must have conducted SFV measurements on an additional three foundations (for either/or monopile and jackets) 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.

(16) Abbreviated SFV measurements must be conducted on the remaining piles for which thorough SFV is not conducted. Abbreviated SFV must be conducted as follows:

(i) SFV measurements must be made at a single acoustic recorder, consisting of a near-bottom and mid-water hydrophone, at approximately 750 m from the pile being driven, in the direction of lowest transmission loss to record sounds throughout the duration of all pile driving of each foundation. Reports of abbreviated SFV monitoring must be included in the weekly pile driving reports;

(ii) The abbreviated SFV data collected will be used to compare the noise levels defined as a result of thorough SFV;

(iii) Abbreviated SFV monitoring duration and equipment must comply with the conditions specified in paragraphs (c)(14)(ii) through (14)(v) of this section;

(iv) LOA Holder must review abbreviated SFV results for each pile within 24 hours of completion of the foundation installation. If measured levels at 750 m did not exceed the expected levels defined during thorough SFV, LOA Holder does not need to take any additional action. If measured levels

from abbreviated SFV for any pile are greater than expected levels (as defined by thorough SFV), LOA Holder must evaluate the available information from the pile installation to determine if there is an identifiable cause of the greater than expected sound levels (*i.e.*, a failure of the noise attenuation system), identify and implement corrective action, and report this information (inclusive of an explanation of the suspected or identified cause) to NMFS Office of Protected Resources and Greater Atlantic Regional Fisheries Office within 48 hours of completion of the installation of the pile, during which the greater than expected sound levels occurred. If LOA Holder can demonstrate that this greater than expected sound level was the result of a failure of the noise attenuation system (*e.g.*, loss of a generator supporting a bubble curtain such that one bubble curtain failed during pile driving) that can be remedied in a way that returns the noise attenuation system to pre-failure conditions, or if there is another satisfactory explanation for the increase in sound that is not expected to be repeated for subsequent piles, LOA Holder can request concurrence from NMFS to proceed without thorough SFV monitoring that would otherwise be required within 72 hours. LOA Holder is required to remedy any such failure of the noise attenuation system prior to carrying out any additional pile driving;

(v) If results of abbreviated SFV monitoring for any pile exceed the expected noise levels at 750 m established through the initial thorough SFV, LOA Holder must resume thorough SFV monitoring (as described in paragraph (c)(15)(i) of this section) for installation of the same foundation type and installation method within 72 hours after the completion of pile driving with an exceedance. LOA Holder can request concurrence from NMFS Office of Protected Resources and Greater Atlantic Regional Fisheries Office to resume abbreviated SFV following submission of an interim report from thorough SFV that demonstrates ranges to the Level A harassment and Level B harassment thresholds within expected values (assuming 10 dB attenuation). LOA Holder may automatically resume abbreviated SFV monitoring if three consecutive thorough SFV reports indicate ranges to the Level A harassment and Level B harassment thresholds are within modeled distances (assuming 10 dB attenuation); and

(vi) If results from any thorough SFV monitoring triggered by results from abbreviated SFV indicate that ranges to the Level A harassment and Level B harassment thresholds (assuming 10 dB

attenuation) are larger than expected values, NMFS Office of Protected Resources and Greater Atlantic Regional Fisheries Office will meet within 3 business days to discuss the results of SFV monitoring, the severity of exceedance of distances to identified isopleths of concern, the species affected, and modeling assumptions, and whether the SFV results demonstrate the magnitude and degree of impacts from the Project are greater than those considered in this final rulemaking. Implementation of additional measures to reduce pile driving noise and/or additional thorough SFV may also be required.

(17) LOA Holder must conduct SFV measurements during turbine operations to estimate turbine operational source levels, in accordance with a NMFS-approved SFV Plan. SFV must be conducted in the same manner as previously described in paragraphs (c)(14)(ii) and (iii) of this section, with appropriate adjustments to measurement distances, number of hydrophones, and hydrophone sensitivities being made, as necessary.

(18) LOA Holder 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 LOA Holder would ensure that the first three monopile foundation/entire jacket foundation (inclusive of all pin piles for a jacket foundation) installation sites selected for SFV measurements are representative of the rest of the monopile and/or jacket foundation installation sites such that future pile installation events are anticipated to produce similar 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, LOA Holder 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;

(19) LOA Holder 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 the planned start of pile driving

and abide by the Plan if approved. LOA Holder must obtain both NMFS Office of Protected Resources and NMFS GARFO 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

(20) LOA Holder 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 PAM Plan if approved. The PAM Plan must include a description of all proposed PAM equipment and hardware, the calibration data, bandwidth capacity, address how the proposed PAM must follow standardized measurement, processing methods, reporting metrics, and metadata standards for offshore wind as described in NOAA and BOEM Minimum Recommendations for Use of Passive Acoustic Listening Systems in Offshore Wind Energy Development Monitoring and Mitigation Programs (2021). The PAM 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. No pile installation can occur if LOA Holder's PAM Plan does not receive approval from NMFS Office of Protected Resources and NMFS GARFO Protected Resources Division.

(21) In the event of a cetacean live stranding (or near-shore atypical milling) event within 50 km of the pile driving activities, where the NMFS Stranding Network is engaged in herding or other interventions to return animals to the water, NMFS will advise of the need to implement shutdown procedures for all active pile driving activities operating within 50 km of the stranding. Shutdown procedures for live stranding or milling cetaceans include the following:

(i) If at any time, the marine mammal(s) die or are euthanized, or if herding/intervention efforts are stopped, NMFS will advise that the shutdown around the animals' location is no longer needed;

(ii) Otherwise, shutdown procedures will remain in effect until NMFS determines and advises that all live animals involved have left the area (either of their own volition or following an intervention); and

(iii) If further observations of the marine mammals indicate the potential for re-stranding, additional coordination will be required to determine what measures are necessary to minimize that likelihood (*e.g.*, extending the shutdown or moving operations farther away) and to implement those measures as appropriate.

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

(1) LOA Holder must establish and implement clearance and shutdown zones for HRG surveys using visual monitoring, as described in this paragraph (d);

(2) LOA Holder is required to have at least one PSO on active duty per HRG vessel during HRG surveys that are conducted during daylight hours (*i.e.*, from 30 minutes prior to civil sunrise through 30 minutes following civil sunset) and at least two PSOs on active duty per vessel during HRG surveys that are conducted during nighttime hours;

(3) 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;

(4) LOA Holder is required to ramp-up acoustic sources prior to commencing full power, which involves initiating source operation at a reduced energy level (relative to full operating capacity) followed by a waiting period, unless the equipment operates on a binary on/off switch. LOA Holder is also required to ensure visual clearance zones are observable (*e.g.*, not obscured from observation 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;

(5) 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 (d)(11) of this section;

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

(7) 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;

(8) LOA Holder 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;

(9) 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;

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

(11) Once the survey has commenced, LOA Holder must shut down acoustic sources if a marine mammal enters a respective shutdown zone. In cases when the shutdown zones become obscured for brief periods due to inclement weather, survey operations may 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 (d)(11) is detected in the shutdown zone;

(12) 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;

(13) LOA Holder 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 (d)(11) of this section is detected in the shutdown zone; and

(14) 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.

(e) *Fisheries monitoring surveys*. The following measures 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) LOA Holder and its cooperating institutions, contracted vessels, or commercially hired captains must

implement the following “move-on” rule: If marine mammals are sighted within 1 nmi(1,852 m) of the planned location and 15 minutes before gear deployment, then LOA Holder and 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, LOA Holder and its cooperating institutions, contracted vessels, or commercially hired captains must move again or skip the station;

(3) If a marine mammal is at risk of interacting with or becoming entangled in the gear 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) LOA Holder 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) as well as for 15 minutes prior to deploying gear and for 15 minutes after haul back;

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

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

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

(8) 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;

(9) All in-water survey gear, including buoys, must be properly labeled with the scientific permit number or identification as LOA Holder’s research gear. All labels and markings on the gear, buoys, and buoy lines must also be compliant with the Atlantic Large Whale Take Reduction Plan regulations

at 50 CFR 229.32, and all buoy markings must comply with instructions received by the GARFO Protected Resources Division;

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

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

§ 217.345 Monitoring and reporting requirements.

(a) *PSO and PAM operator qualifications*. LOA Holder must implement the following measures applicable to PSOs and PAM operators:

(1) LOA Holder 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 with a major in one of the natural sciences. 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 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 (8) 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 that must be submitted to NMFS. This requirement is waived for any PSOs and PAM operators that completed a relevant training course more than five years prior to seeking approval but have been working consistently as a PSO or PAM operator within the past five years;

(6) PSOs are responsible for obtaining NMFS' approval. NMFS may approve PSOs as conditional or unconditional. A conditionally-approved PSO may be one who has completed training in the last 5 years but has not yet attained field experience. An unconditionally approved PSO 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 PSOs must be unconditionally approved and have a minimum of 90 days in a 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 must be paired with an unconditionally approved PSO;

(7) PSOs for HRG surveys may be unconditionally or conditionally approved. PSOs for foundation installation 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, and HRG surveys) must be designated as the Lead PSO or Lead PAM operator;

(9) LOA Holder must submit 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, LOA Holder 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 have completed a PAM operator training course and demonstrate prior experience using PAM software, equipment, and real-time acoustic detection systems. They must demonstrate that they have prior experience independently analyzing archived and/or real-time PAM data to identify and classify baleen whale and other marine mammal vocalizations by species, including North Atlantic right whale and humpback whale vocalizations, and experience with deconflicting multiple species' vocalizations that are similar and/or received concurrently. PAM operators must be independent observers (*i.e.*, not construction personnel), trained to use relevant project-specific PAM software and equipment, and must also be able to test software and hardware functionality prior to beginning real-time monitoring. The PAM operator must be able to identify and classify marine mammal acoustic detections by species in real-time (prioritizing North Atlantic right whales and noting other marine mammal vocalizations, when detected). At a minimum, for each acoustic detection, the PAM operator must be able to categorically determine whether a North Atlantic right whale is detected, possibly detected, or not detected, and notify the Lead PSO of any confirmed or possible detections, including baleen whale detections that cannot be identified to species. If the PAM software is capable of localization of sounds or deriving bearings and distance, the PAM operator must demonstrate experience using this technique. A Lead PAM operator must meet all of these requirements and have

a minimum of 90 days in the specified role or sufficient alternative experience;

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

(13) 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, *etc.*).

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

(1) PSOs must monitor for marine mammals prior to, during, and following impact pile driving 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) PAM operator(s) must acoustically monitor for marine mammals prior to, during, and following all pile driving activities. PAM operators may be located on a vessel or remotely on-shore but must have the appropriate equipment (*i.e.*, computer station equipped with a data collection software system available wherever they are stationed) and be in real-time communication with PSOs and transiting vessel captains. The PAM operator must monitor to and past the clearance zone for large whales;

(3) For foundation installation, 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 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;

(4) 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. The PAM operator(s) must assist PSOs in ensuring full coverage of the clearance and shutdown zones;

(5) 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) 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;

(6) 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);

(7) Any visual observations of marine mammals by any project personnel must be communicated immediately to on-duty PSOs and vessel captains associated with other project vessels to increase situational awareness;

(8) PSOs must use high magnification (25x) binoculars, standard handheld (7x) binoculars, and the naked eye to search continuously for marine mammals. During foundation installation, at least two PSOs on the pile driving vessel must be equipped with functional Big Eye binoculars (e.g., 25 × 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. A minimum of three on-duty PSOs must be active on a dedicated PSO vessel. PAM operators must have the appropriate equipment (i.e., a computer station equipped with a data collection software system available wherever they are stationed) in accordance with the NMFS-approved PAM Plan as described in § 217.344(c)(20);

(9) 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;

(10) During periods of low visibility (e.g., darkness, rain, fog, poor weather

conditions, etc.), PSOs must use alternative technology (e.g., infrared or thermal cameras) to monitor the clearance and shutdown zones as approved by NMFS; and

(11) PSOs must remain in real-time contact with the PAM operators and construction personnel responsible for implementing mitigation (e.g., delay to pile driving) 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

(c) *PSO and PAM operator requirements during WTG, OSS, and Met Tower foundation installation.* The following measures apply to PSOs and PAM operators during WTG, OSS, and Met tower foundation installation and must be implemented by LOA Holder:

(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 activities. If PSOs cannot visually monitor the minimum visibility zone prior to impact pile driving at all times using the equipment described in paragraphs (b)(6) and (7) of this section, pile driving operations 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 and at least three on-duty PSOs must be stationed on each dedicated PSO vessel. There must be a minimum of three PSO observation platforms during impact pile driving. 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 in accordance with a NMFS-approved PAM Plan; and

(3) LOA Holder must conduct PAM for at least 24 hours immediately prior to pile driving activities. The PAM operator must review all detections from the previous 24-hour period immediately prior to pile driving activities.

(d) *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 LOA Holder:

(1) 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 two

PSOs during nighttime surveying (if it occurs);

(2) 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;

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

(4) During daylight hours when survey equipment is not operating, LOA Holder 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.

(e) *Monitoring requirements during fisheries monitoring surveys.* The following measures apply during fisheries monitoring surveys and must be implemented by LOA Holder:

(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.

(f) *Reporting.* LOA Holder must comply with the following reporting measures:

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

(2) LOA Holder 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: the date and time that monitored activity begins or ends; 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); the PSO who sighted the animal; the time of sighting; the weather parameters (*e.g.*, wind speed, percent cloud cover, visibility); the water conditions (*e.g.*, Beaufort sea state, tide state, water depth); all marine mammal sightings, regardless of distance from the construction activity; species (or lowest possible taxonomic level possible); the pace of the animal(s); the estimated number of animals (minimum/maximum/high/low/best); the estimated number of animals by cohort (*e.g.*, adults, yearlings, juveniles, calves, group composition, *etc.*); 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); 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; 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); the activity at time of sighting (*e.g.*, 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.*); the marine mammal occurrence in Level A harassment or Level B harassment zones; 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; other human activity in the area, and; other applicable information, as required in any LOAs issued under § 217.346;

(4) LOA Holder must compile and submit weekly reports during foundation installation to NMFS Office of Protected Resources that document the type of pile, pile diameter, daily start and stop of all pile driving associated with the Project; the start and stop of associated observation periods by PSOs; hammer log (number of strikes, max hammer energy, duration of piling), any changes to noise attenuation systems and/or hammer schedule, 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 must also include abbreviated SFV results. The weekly reports must also confirm that the required SFV was carried out for each pile and that results were reviewed on the required timelines. 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 LOA Holder;

(5) LOA Holder 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);

(6) Full PAM detection data, metadata, and location of recorders (or GPS tracks, if applicable) must be submitted within 90 calendar days following completion of impact pile driving foundations and every 90 calendar days for transit lane PAM using the International Organization for Standardization (ISO) standard metadata forms and instructions available on the NMFS Passive Acoustic Reporting System website (<https://www.fisheries.noaa.gov/resource/document/passive-acoustic-reporting-system-templates>). Concurrently, the full acoustic recordings from real-time systems must also be sent to the National Centers for Environmental Information (NCEI, <https://www.ncei.noaa.gov/products/passive-acoustic-data>) for archiving.

(7) LOA Holder must submit a draft annual report to NMFS Office of Protected Resources no later than one year following date of LOA issuance within each given calendar year. LOA Holder 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 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 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); 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;

(8) LOA Holder 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. At a minimum, the draft and final 5-year report must include: the total number (annually and across all 5 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) completed in each of the 5 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 5-year summary and evaluation of all SFV data collected; a 5-year summary and evaluation of all PAM data collected; a 5-year summary and evaluation of marine mammal behavioral observations; a 5-year summary and evaluation of mitigation and monitoring implementation and effectiveness; a list of recommendations to inform environmental compliance assessments for future offshore wind actions. 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;

(9) For those foundation piles requiring SFV measurements, LOA Holder must provide the initial results of the SFV measurements to NMFS Office of Protected Resources in an interim report after each foundation installation event as soon as they are available and prior to a subsequent foundation installation, but no later than 48 hours after the installation of each pile for which thorough SFV is carried out. The report must include, at minimum: a summary of pile installation activities (pile diameter, pile weight, pile length, water depth, sediment type, total installation time [start time, end time], duration of pile driving), 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; 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 (L_{50}) and L_5 (95 percent exceedance) statistics for each metric; estimated marine mammal Level A harassment and Level B harassment isopleths, calculated using the maximum-over-depth L_5 (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 each hydrophone array location 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. LOA Holder 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, LOA Holder must indicate full details of the calibration procedure, results, and any associated issues in the 48-hour interim reports;. All abbreviated SFV reports must include the results from the hydrophones at 750m and a comparison to the expected levels at 750 m based on the previously completed thorough SFV for comparable pile type and installation method.;

(10) The final results of SFV measurements from each foundation installation 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 transmission loss 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, at the recording and foundation installation 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 hydrophone equipment and methods (*i.e.*, recording device, bandwidth/sampling rate; distance from the pile 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; a description of the noise abatement system and operational parameters (*e.g.*, bubble flow rate, distance deployed from the pile, *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;

(11) If at any time during the Project LOA Holder 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, LOA Holder must inform NMFS Office of Protected Resources within 1 business day of becoming aware of this issue or before the next pile is driven, whichever comes first;

(12) Performance reports for each bubble curtain deployed must include water depth, current speed and direction, wind speed and direction, bubble curtain deployment/retrieval date and time, bubble curtain hose length, bubble curtain radius (distance from pile), diameter of holes and hole spacing, air supply hose length, compressor type (including rated cubic feet per minute (CFM) and model number), number of operational compressors, performance data from each compressor (including revolutions per minute (RPM), pressure, start times, and stop times), free air delivery (m^3/min), total hose air volume ($m^3/(min \cdot m)$), schematic of GPS waypoints during hose laying, maintenance procedures performed (pressure tests, inspections, flushing, re-drilling, and any other hose or system maintenance) before and after installation and the time and date of each of these procedures, and the length of time the bubble curtain was on the seafloor prior to foundation installation. Additionally, the report must include any important observations regarding performance (before, during, and after pile installation), such as any observed weak areas of low pressure. The report may also include any relevant video

and/or photographs of the bubble curtain(s) operating during pile driving;

(13) If a North Atlantic right whale is acoustically detected at any time by a project-related PAM system, LOA Holder 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;

(14) 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 after pile driving has ended and instruments have been pulled from the water. Reporting must use the webform templates on the NMFS Passive Acoustic Reporting System website at <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 all real-time hydrophones must also be sent to the National Centers for Environmental Information for archiving within 90 calendar days following completion of activities requiring PAM for mitigation. Submission details can be found at: <https://www.ncei.noaa.gov/products/passive-acoustic-data>;

(15) LOA Holder 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, LOA Holder 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 (<https://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, LOA Holder must submit a summary report to GARFO (nmfs.gar.incidental-take@noaa.gov) and 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, LOA Holder 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) In the event that personnel involved in the Project discover a stranded, entangled, injured, or dead marine mammal, LOA Holder 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, LOA Holder 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), 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 Fisheries 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;

(v) In the event of a vessel strike of a marine mammal by any vessel associated with the Project or if other project activities cause a non-auditory injury or death of a marine mammal, LOA Holder 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, LOA Holder 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). LOA Holder 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. LOA Holder may not resume their activities until notified by NMFS Office of Protected Resources; and

(16) LOA Holder must report any lost gear associated with the fishery surveys to the NOAA 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.

§ 217.346 Letter of Authorization.

(a) To incidentally take marine mammals pursuant to this subpart, LOA Holder must apply for and obtain an LOA;

(b) The LOA, unless suspended or revoked, may be effective for a period of time not to exceed December 31, 2029, the expiration date of this subpart;

(c) In the event of projected changes to the activity or to mitigation and monitoring measures required by the LOA, LOA Holder must apply for and obtain a modification of the LOA as described in § 217.347;

(d) The LOA must set forth:

(1) Permissible methods of incidental taking;

(2) Means of effecting the least practicable adverse impact (*i.e.*, mitigation) on the species, its habitat, and on the availability of the species for subsistence uses; and

(3) Requirements for monitoring and reporting.

(e) Issuance of the LOA must be based on a determination that the level of taking must be consistent with the findings made for the total taking allowable under the regulations of this subpart; and

(f) Notice of issuance or denial of the LOA must be published in the **Federal**

Register within 30 days of a determination.

§ 217.347 Modifications of Letter of Authorization.

(a) The LOA issued under §§ 217.342 and 217.346 or this section for the activity identified in § 217.340 shall be modified upon request by LOA Holder, provided that:

(1) The proposed specified activity and mitigation, monitoring, and reporting measures, as well as the anticipated impacts, are the same as those described and analyzed for this subpart (excluding changes made pursuant to the adaptive management provision in paragraph (c)(1) of this section); and

(2) NMFS Office of Protected Resources determines that the mitigation, monitoring, and reporting measures required by the previous LOA under this subpart were implemented.

(b) For a LOA modification request by the applicant that includes changes to the activity or the mitigation, monitoring, or reporting (excluding changes made pursuant to the adaptive management provision in paragraph (c)(1) of this section), the LOA shall be modified, 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 more than a minor change in the total estimated number of takes (or distribution by species or years); 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) The LOA issued under §§ 217.342 and 217.346 or this section for the activities identified in § 217.340 may be modified by NMFS Office of Protected

Resources under the following circumstances:

(1) Through adaptive management, NMFS Office of Protected Resources may modify (including delete, modify, or add to) the existing mitigation, monitoring, or reporting measures (after consulting with the LOA Holder regarding the practicability of the modifications), if doing so creates a reasonable likelihood of more effectively accomplishing the goals of the mitigation and monitoring;

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

(A) Results from LOA Holder's monitoring;

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

(C) 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.

(ii) If, through adaptive management, 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.

(2) If NMFS Office of Protected Resources determines that an emergency exists that poses a significant risk to the well-being of the species or stocks of marine mammals specified in the LOA issued pursuant to §§ 217.342 and 217.346 or this section, the 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.

§§ 217.348–217.349 [Reserved]

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