E 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XB217]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys Offshore of Massachusetts, Rhode Island, Connecticut, and New York

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

ACTION: Notice; issuance of renewal incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA), as amended, notification is hereby given that NMFS has issued a Renewal incidental harassment authorization (IHA) to Vineyard Wind, LLC (Vineyard Wind) to incidentally harass marine mammals incidental to marine site characterization survey activities off the coast of Massachusetts in the areas of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0501 and OCS-A 0522) and along potential submarine cable routes to landfall locations in Massachusetts, Rhode Island, Connecticut, and New York.

DATES: This Renewal IHA is valid from July 15, 2021 through June 20, 2022.

FOR FURTHER INFORMATION CONTACT: Reny Tyson Moore, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the original application, renewal request, and supporting documents (including NMFS **Federal Register** notices of the original proposed and final authorizations, and the previous IHA), as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-*

mammal-protection-act. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The Marine Mammal Protection Act (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 and either regulations are proposed or, if the taking is limited to harassment, a notice of a proposed incidental take authorization is provided to the public for review.

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 such species or stocks for taking for certain subsistence uses (referred to here as "mitigation measures"). Monitoring and reporting of such takings are also required. The meaning of key terms such as "take," "harassment," and "negligible impact" can be found in section 3 of the MMPA (16 U.S.C. 1362) and the agency's regulations at 50 CFR 216.103.

NMFS' regulations implementing the MMPA at 50 CFR 216.107(e) indicate that IHAs may be renewed for additional periods of time not to exceed one year for each reauthorization. In the notice of proposed IHA for the initial authorization, NMFS

described the circumstances under which we would consider issuing a Renewal. Specifically, on a case-by-case basis, NMFS may issue a one-time one-year Renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical, or nearly identical, activities as described in the **Detailed Description of Specified Activities** section of the initial IHA issuance notice is planned or (2) the activities as described in the **Detailed Description of Specified Activities** section of the initial IHA issuance notice would not be completed by the time the initial IHA expires and a Renewal IHA would allow for completion of the activities beyond that described in the **Dates** section of the initial IHA issuance, provided all of the following conditions are met:

(1) A request for renewal is received no later than 60 days prior to the needed Renewal IHA effective date (recognizing that the Renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA);

(2) The request for renewal must include the following:

- An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.*, reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take); and
- A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized;

(3) Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

An additional public comment period of 15 days (for a total of 45 days), with direct notice by email, phone, or postal service to commenters on the initial IHA, is provided to allow for any additional comments on the proposed Renewal IHA. A description of the renewal process may be found on our website at: *www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-harassment-authorization-renewals*.

History of Request

On May 06, 2020, NMFS issued an IHA to Vineyard Wind to take marine mammals incidental to marine site characterization survey activities off the coast of Massachusetts in the areas of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0501 and OCS-A 0522) and along potential submarine cable routes to landfall locations in Massachusetts, Rhode Island, Connecticut, and New York (85 FR 26940), effective from June 01, 2020 through May 31, 2021. This IHA was re-issued on July 14, 2020 with the only change being a change in effective dates from June 21, 2020 through June 20, 2021 (85 FR 42357). On March 25, 2021, NMFS received an application for the Renewal IHA of the re-issued IHA. As described in the application for renewal, the activities for which incidental take is requested consist of activities that are covered by the initial authorization but will not be completed prior to its expiration. As required, the applicant also provided a preliminary monitoring report (available at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*) which confirms that the applicant has implemented the required mitigation and monitoring, and which also shows that no impacts of a scale or nature not previously analyzed or authorized have occurred as a result of the activities conducted. The notice of the proposed Renewal IHA was published on June 8, 2021 (86 FR 30442).

Description of the Specified Activities and Anticipated Impacts

Vineyard Wind plans to conduct marine site characterization surveys, specifically high-resolution geophysical (HRG) surveys, in support of offshore wind development projects in the areas of Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (#OCS-A 0501 and #OCS-A 0522) (Lease Areas) and along potential submarine cable routes to landfall locations in Massachusetts, Rhode Island, Connecticut, and New York. The purpose of the marine site characterization surveys is to obtain a baseline assessment of seabed/sub-surface soil conditions in the Lease Areas and cable route corridors to support the siting of potential future offshore wind projects. Underwater sound resulting from Vineyard Wind's planned marine site characterization surveys has the potential to result in incidental take of 14 marine mammal species in the form of Level B behavioral harassment. Vineyard Wind requested a renewal of the initial IHA that was re-issued by NMFS in July 2020 on the basis that the activities as described in the Specified Activities section of the initial IHA would not be completed by the time the IHA expires and a Renewal IHA would allow for completion of the activities beyond that described in the Dates and Duration section of the initial IHA.

In their 2020 IHA application, Vineyard Wind estimated that it would take a year to complete the marine site characterization surveys. This schedule was based on 24-hour operations and included potential down time due to inclement weather. With up to eight survey vessels operating concurrently, a maximum of 736 vessel days were anticipated. Each vessel would maintain a speed of approximately 3.5 knots (kn; 6.5 kilometers (km)/hour) while transiting survey lines and each vessel would cover approximately 100 km per day. However, during the 2020-2021 survey season, Vineyard Wind completed only 184 vessel days of the 736 vessel days estimated to complete the work and only surveyed approximately 25 percent of the planned survey routes. Vineyard Wind predicts that a maximum of 552 vessel days, with up to 8 survey vessels operating concurrently,

over 181 days will be required to survey the remaining routes, estimated to be approximately 55,200 km. This Renewal IHA authorizes harassment of marine mammals for this remaining survey distance using survey methods identical to those described in the initial IHA application; therefore, the anticipated effects on marine mammals and the affected stocks also remain the same. All active acoustic sources and mitigation and monitoring measures remain as described in the **Federal Register** notices of the proposed IHA (85 FR 7952, February 12, 2020) and issued IHA (85 FR 26940, May 06, 2020). The amount of take requested for the Renewal IHA reflects the amount of remaining work in consideration of marine mammal monitoring data from the 2020 survey season resulting in equal or less take than that authorized in the initial IHA. The surveys would be a subset of, but otherwise identical to, those analyzed for the initial IHA.

Detailed Description of the Activity

A detailed description of the survey activities for which take is authorized here may be found in the **Federal Register** notices of the proposed IHA (85 FR 7952, February 12, 2020), issued IHA (85 FR 26940, May 06, 2020), and reissued IHA (85 FR 42357, July 14, 2020) for the initial authorization. Vineyard Wind was not able to complete the survey activities analyzed in the initial IHA by the date the IHA expired (June 20, 2021). As such, the surveys Vineyard Wind will conduct under this Renewal IHA will be a continuation of the surveys as described in the initial IHA. The location and nature of the activities, including the types of equipment planned for use, are identical to those described in the previous notices. Because part of the work has already been completed, the duration of the surveys conducted under the Renewal IHA will occur over less time than that described for the initial IHA (181 days versus 365 days); however, Vineyard Wind will continue to operate 24 hours per day to complete the work. This Renewal IHA is effective from July 15, 2021 through June 20, 2022.

Description of Marine Mammals

A description of the marine mammals in the area of the activities for which take is authorized here, including information on abundance, status, distribution, and hearing, may be found in the **Federal Register** notices of the proposed and final IHAs for the initial authorization (85 FR 7952, February 12, 2020; 85 FR 26940, May 06, 2020) and the proposed Renewal IHA (85 FR 30435, June 08, 2021). Upon receipt of Vineyard Wind's renewal request, NMFS reviewed the monitoring data from the initial IHA, recent draft Stock Assessment Reports, information on relevant Unusual Mortality Events, and other scientific literature.

The draft 2020 Stock Assessment Report (SAR, available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports*) states that estimated abundance has increased for the Western North Atlantic stock of common dolphins, from 172,825 (CV = 0.21) to 172,974 (CV = 0.21), and decreased for the following marine mammal stocks since the issuance of the initial IHA: the Gulf of Maine stock of humpback whales (from 1,396 (CV = 0) to 1,393 (CV = 0.15)), the Western North Atlantic stock of fin whales (from 7,418 (CV = 0.25) to 6,802 (CV = 0.24)), and the Canadian East coast stock of minke whales (from 24,202 (CV = 0.3) to 21,968 (CV=0.31)). Abundance and density estimates for the Western North Atlantic stock of North Atlantic right whales have also been updated, and state that right whale abundance has decreased from 428 to 368 (95% CI 356-378) individuals (Pace 2021) and that densities have slightly increased in the Project Area from 0.105 whales per 100 square kilometers (km^2) to 0.169 whales per 100 km^2 (Roberts *et al.* 2020; note that the updated density estimate was not included in the Proposed Renewal). In addition, Oleson *et al*. (2020) provides evidence that was not available at time of the initial IHA that part of Vineyard Wind's Project Area coincides directly with year-round core foraging habitat North Atlantic right whales. NMFS discussed the importance of portions of the Project Area as core habitat for North Atlantic right whales

in the proposed and final notices of the initial IHA, but did not include this discussion, or reference to the visual and acoustic detections of North Atlantic right whales indicating a nearly year-round presence discussed by Oleson *et al*. (2020) in the Proposed Renewal.

An additional update related to species for which take is authorized here that was not included in the proposed Renewal IHA, is the change in status of the Gulf of Maine humpback whale stock from non-strategic to strategic reported in the draft SAR. This change was made because the detected mortality is estimated to be only 19 percent of all mortalities, and the total estimated human-caused annual mortality and serious injury is 51.5 animals compared to the Potential Biological Removal (PBR) estimate of 22 animals.

NMFS has determined that neither the updated abundance and density information presented above nor any other new information, including the information regarding year-round North Atlantic right whale core foraging habitat and the designation of the Gulf of Maine humpback whale stock as strategic, affects which species or stocks have the potential to be affected or the pertinent information in the Description of the Marine Mammals in the Area of Specified Activities contained in the supporting documents for the initial IHA.

Potential Effects on Marine Mammals and their Habitat

A description of the potential effects of the specified activity on marine mammals and their habitat for the activities for which take is authorized here may be found in the **Federal Register** notices of the proposed and final IHAs for the initial authorization (85 FR 7952, February 12, 2020; 85 FR 26940, May 06, 2020). NMFS has reviewed the monitoring data from the initial IHA, recent draft Stock Assessment Reports, Technical Reports (*e.g.*, Oleson *et al.* 2020, Pace 2021), information on relevant Unusual Mortality Events, other scientific literature (*e.g.*, Roberts *et al.* 2020), and the public comments. NMFS does not expect that the generally short-term, intermittent, and transitory HRG

survey activities would impact the reproduction or survival of any of the species and stocks that have the potential to be affected by this authorization. Therefore, NMFS has determined that neither the information mentioned above nor any other new information affects our initial analysis of impacts on marine mammals and their habitat.

Estimated Take

A detailed description of the methods and inputs used to estimate take for the specified activity are found in the **Federal Register** notices of the proposed and final IHAs for the initial authorization (85 FR 7952, February 12, 2020; 85 FR 26940, May 06, 2020). The acoustic source types, as well as source levels applicable to this authorization remain unchanged from the initial IHA. Similarly, the stocks taken, methods of take, and type of take (*i.e.*, Level B harassment only) remain unchanged from the initial IHA.

In the initial authorization for the marine site characterization survey activities, the potential for take was estimated using the following parameters: (1) maximum number of survey days that could occur over a 12-month period; (2) maximum distance each vessel could travel per 24-hour period in each of the identified survey areas; (3) maximum ensonified area (zone of influence (ZOI)); and (4) mean annual densities for species in the area of specified activity. The calculated radial distances to the Level B harassment threshold (160 decibel (dB) root mean square (rms)) from a survey vessel are included in Table 1.

Table 1. Modeled Radial Distances from HRG Survey Equipment to Isopleths Corresponding to Level B Harassment Thresholds

HRG Survey Equipment		Level B Harassment Horizontal Impact Distance (m)
Shallow subbottom profilers	EdgeTech Chirp 216	4
Deep seismic profilers	Applied Acoustics AA251 Boomer	178
Deep seismic profilers	GeoMarine Geo Spark 2000 (400 tip)	195

The equation for estimating take for all species remains the same as the initial IHA:

Estimated Take = D × ZOI × # of days

Where: D = species density (per km^2) and ZOI = maximum daily ensonified area

As described in the **Federal Register** notices of the proposed and final IHAs for the initial authorization (85 FR 7952, February 12, 2020; 85 FR 26940, May 06, 2020), Vineyard Wind calculated a conservative ZOI by applying the maximum radial distance for any category and type of HRG survey equipment considered in its assessment to the mobile source ZOI calculation. Vineyard Wind estimates that survey vessels will achieve a maximum daily track line distance of 100 km per day during proposed surveys. This distance accounts for the vessel traveling at roughly 3.5 kn (6.5 km/hour) and accounts for non-active survey periods. Based on the maximum estimated distance to the Level B harassment threshold of 195 m (Table 1) and the maximum estimated daily track line distance of 100 km, which are the same as were used in the initial IHA, Vineyard Wind estimated that an area of 39.12 km^2 will be ensonified to the Level B harassment threshold per day during Vineyard Wind's survey activities. This is a conservative estimate as it assumes the HRG sources that result in the greatest isopleth distances to the Level B harassment threshold will be operated at all times during all vessel days.

This methodology of calculating take in the initial IHA applies to this issued Renewal IHA for all species, with the only difference being the fewer amount of vessel days (*i.e.*, 552 versus 736). The result is that the amount of take is reduced proportionally to the reduction in the number of days of work remaining. Vineyard Wind has requested a deviation from the proportionally reduced calculated take for Risso's dolphins as described below. Other than in the additional instances described below, NMFS agrees with Vineyard Wind's request for take and we have authorized the same amount of take as described in their request.

In their application for a Renewal IHA, Vineyard Wind requested that the number of Level B harassment takes (per the equation above) for Risso's dolphins be equal to

their average group size estimate (6 individuals), given a proportional reduction in take based on the reduction in the number of days of work remaining would result in a take estimate that is smaller than the average group size estimate. As described in Vineyard Wind's preliminary monitoring report, they did not observe any Risso's dolphins during the survey work thus far completed. Therefore, we have authorized the same amount of take as proposed in the initial IHA, which is based on an average group size of 6 Risso's dolphins (Table 2).

In the **Federal Register** notices of the proposed and final IHAs for the initial authorization (85 FR 7952, February 12, 2020; 85 FR 26940, May 06, 2020) NMFS limited takes by Level B harassment authorized for North Atlantic right whales to 10 individuals, which was reduced from an initially calculated take of 31 whales. There were several reasons justifying this reduction. Vineyard Wind established and monitored a shutdown zone at least 2.5 times (500-meters (m)) greater than the predicted Level B harassment threshold distance (195 m). Take had also been conservatively calculated based on the largest source, which will not be operating at all times, and take is therefore likely over-estimated to some degree. Furthermore, the potential for incidental take during daylight hours is very low given that two Protected Species Observers (PSOs) are required for monitoring (over the 500-m shutdown zone for North Atlantic right whales, compared with the 195-m estimated Level B harassment zone). Additionally, sightings of right whales had been uncommon during previous marine site characterization surveys conducted near Vineyard Wind's Project Area. For example, no North Atlantic right whales were sighted during Bay State Wind surveys in adjacent and overlapping survey areas over 376 vessel days between May 11, 2018 and March 14, 2019. Vineyard Wind also had no North Atlantic right whales sighted in their marine mammal monitoring report that included Lease Areas OCS-A 0501 and OCS-A 0522 from May 31, 2019 through January 7, 2020. Therefore, the aforementioned factors led NMFS to conclude

that the unadjusted modeled exposure estimate was likely a significant overestimate of actual potential exposure. Accordingly, in the initial IHA NMFS made a reasonable adjustment to conservatively account for these expected mitigating effects from the required mitigation measures on actual taking of right whales.

During the 2020-2021 surveys, Vineyard Wind reported four sightings of North Atlantic right whales (seven individuals) in their preliminary monitoring report. While all of these individuals were observed on a single day (December 20, 2020) and outside both the estimated 195-m Level B harassment Zone and the 500 m Exclusion Zone (EZ) for North Atlantic right whales (closest approaches were > 900 m), they represent an increased amount of sightings observed during marine site characterization surveys, though the information suggests that there were no takes.

Roberts et al. (2020) provided updated monthly densities of North Atlantic right whales in the area of proposed activities since the time of the initial IHA. These updated data for North Atlantic right whale densities incorporate additional sighting data and include increased spatial resolution. We reviewed the updated model documentation and recalculated the North Atlantic right whale density estimates following the same methods outlined in the proposed and final IHAs for the initial authorization (85 FR 7952, February 12, 2020; 85 FR 26940, May 06, 2020). The new model results state that the mean annual North Atlantic right whale densities have slightly increased in the activity area from 0.105 whales per 100 square kilometers (km^2) to 0.169 whales per 100 km^2. Despite the increase in sightings and densities of North Atlantic right whales in the survey area, we believe that an updated unadjusted modeled exposure estimate of 36 individuals based on these slightly increased densities would still represent a significant overestimate of the actual potential exposure, and therefore authorize the same amount of take (10 individuals) for this Renewal IHA as was authorized in the initial IHA, which

accounts for the expected mitigating effects from the required mitigation measures on the actual taking of right whales.

As documented in Vineyard Wind's preliminary monitoring report, there were a number of sightings of delphinids both within the estimated 195 m Level B Harassment Zone and the 100 m EZ that were characterized by the PSOs as 'voluntary approaches.' A "voluntary approach" is defined as a purposeful approach toward the vessel by the delphinid(s) with a speed and vector that indicates that the delphinid(s) is approaching the vessels and remains near the vessel or towed equipment (BOEM 2014). Vineyard Wind PSOs reported 270 sightings of approximately 3,332 individual common dolphins within the estimated 195 m Level B harassment zone (note that these observations did not all occur during actual use of the source for which this zone is estimated, and that the actual zone at the time of observation would have been smaller). Given that Vineyard Wind observed more common dolphins than expected, we authorize the same amount of take (2,036 individuals) as authorized in the initial IHA, as opposed to decreasing it commensurate to the reduced amount of activity remaining. Thus, take numbers authorized in this Renewal IHA (Table 2) represent prorated estimates for all species except North Atlantic right whales, Risso's dolphins, and common dolphins whose authorized take estimates remain the same as authorized in the initial IHA.

On August 20, 2020 Vineyard Wind PSOs observed two white-beaked dolphins within the 195 m Level B harassment zone for the sparker during the first year of Vineyard Wind's survey activities. White-beaked dolphins were considered unlikely to be encountered in the survey area and, therefore, take was not considered reasonably likely to occur and was not authorized in the initial IHA. This species has historically been found in waters outside of the survey area, from southern New England to southern Greenland and Davis Straits (Leatherwood *et al*. 1976, CETAP 1982, Hayes *et al*. 2019), across the Atlantic to the Barents Sea and south to at least Portugal (Reeves *et al*. 1999).

In waters off the northeastern U.S. coast, white-beaked dolphin sightings are typically concentrated in the western Gulf of Maine and around Cape Cod (CETAP 1982, Hayes *et al*. 2019). The dolphins observed during the 2020-2021 surveys were first sighted as unidentified dolphins due to the decreased visibility under sea state 3 conditions, creating challenges in identification. Given the dolphins were of genera *Delphinus*, *Lagenorhynchus*, or *Tursiops*, and in accordance with IHA condition 4(f)(vii), the PSO used their best professional judgment in determining that the animals were exempted from the shutdown requirement. After less than a minute of bow riding the dolphins began swimming away and at the end of the sighting the PSO was able to make a positive ID. The PSO determined the animal was leaving the zone and therefore no mitigation was required. The PSO determined that there was no behavioral change or signs of distress and thus Vineyard Wind did not report the sighting as a potentially unauthorized Level B harassment take. Despite this single observation of white beaked dolphins, encounters with the species in the survey area remain unlikely. For example, no sightings of white beaked dolphins have been reported in monitoring reports from other IHAs issued in the same region in recent years. Therefore, NMFS has determined that the initial determination that take of the species is not reasonably likely to occur and, therefore, that take authorization for the species is not warranted. We have clarified with Vineyard Wind the need to communicate any sightings of rare species to NMFS as soon as possible.

Table 2. Initial IHA Take Authorized and Renewal IHA Take Authorized

Species	Level B harassment		Percent Population[1]
	Take authorized initial IHA	Take authorized Renewal IHA	
Fin whale	67	51	1.1
Humpback whale	46	34	2.1
Minke whale	41	31	1.5
North Atlantic right whale	10	10	2.7
Sei whale	4	3	0.4

Atlantic white sided dolphin	1,011	758	2.0
Bottlenose dolphin (WNA Offshore)	815	611	1.0
Long-finned pilot whales	142	107	0.6
Risso's dolphin	6	6	0.08
Common dolphin	2,036	2,036	2.3
Sperm whale	4	3	0.06
Harbor porpoise	1,045	784	1.7
Gray seal	4,044	3,033	11.17
Harbor seal	4,044	3,033	4.0

[1] Calculations of percentage of stock taken are based on the best available abundance estimate as shown in Table 2 in the notice of the final IHA for the initial authorization (85 FR 26940, May 06, 2020). In most cases the best available abundance estimate is provided by Roberts *et al*. (2016, 2017, 2018), when available, to maintain consistency with density estimates derived from Roberts *et al*. (2016, 2017, 2018). For North Atlantic right whales the best available abundance estimate is derived from the 2021 NOAA Technical Memorandum NMFS-NE-269 Revisions and Further Evaluations of the Right Whale Abundance Model: Improvements for Hypothesis Testing (Pace, 2021). For bottlenose dolphins and seals, Roberts *et al*. (2016, 2017, 2018) provides only a single abundance estimate and does not provide abundance estimates at the stock or species level (respectively), so abundance estimates used to estimate percentage of stock taken for bottlenose dolphins, gray and harbor seals are derived from NMFS SARs (available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports*).

Description of Mitigation, Monitoring and Reporting Measures

The mitigation, monitoring, and reporting measures included as requirements in this authorization are identical to those included in the **Federal Register** notice announcing the issuance of the initial IHA (85 FR 26940, May 06, 2020), and the discussion of the least practicable adverse impact included in that document and the notice of the proposed IHA remains accurate (85 FR 7952, February 12, 2020; 85 FR 26940, May 06, 2020). All mitigation, monitoring and reporting measures in the initial IHA are carried over to this Renewal IHA and summarized here:

- *EZ*: Marine mammal EZs will be established around the HRG survey equipment and monitored by PSO during HRG surveys as follows: A 500-m EZ is required for North Atlantic right whales and a 100-m EZ is required for all other marine mammals (with the exception of certain genera of small delphinids (*i.e.*, *Delphinus*, *Lagenorhynchus*, and

Tursiops) under certain circumstances, such as individuals voluntary approaching the vessel). If a marine mammal is detected approaching or entering the EZs during the planned survey, the vessel operator would adhere to the shutdown procedures described below. In addition to the EZs described above, PSOs would visually monitor a 200-m Buffer Zone; however, this Buffer Zone is not applicable when the EZ is greater than 100 m. PSOs would also be required to observe a 500-m Monitoring Zone and record the presence of all marine mammals within this zone and within the Level B harassment zone. The zones described above would be based upon the radial distance from the active equipment (rather than being based on distance from the vessel itself).

- *PSO*: A minimum of two NMFS-approved PSOs must be on duty and conducting visual observations at all times on all active survey vessels when HRG equipment is operating, including both daytime and nighttime operations. Visual monitoring would begin no less than 30 minutes prior to initiation of HRG survey equipment and would continue until 30 minutes after use of the acoustic source ceases or until 30 minutes past sunset. However, Vineyard Wind has committed to 24-hr use of PSOs. PSOs would establish and monitor the applicable EZs, Buffer Zone and Monitoring Zone as described above.
- *Pre-Operation Clearance Protocols*: Prior to initiating HRG survey activities, Vineyard Wind would implement a 30-minute pre-clearance period. Ramp-up of the survey equipment would not begin until the relevant zones (500-m EZ for North Atlantic right whales and 200-m Buffer Zone for all other species) have been cleared by the PSOs. If any marine mammals are detected within the relevant EZs or Buffer Zone

during the pre-clearance period, initiation of HRG survey equipment would not begin until the animal(s) has been observed exiting the respective EZ or Buffer Zone, or, until an additional time period has elapsed with no further sighting (*i.e.*, minimum 15 minutes for small odontocetes and seals, and 30 minutes for all other species). The pre-clearance requirement would include small delphinids that approach the vessel (*e.g.*, bow ride). PSOs would also continue to monitor the zone for 30 minutes after survey equipment is shut down or survey activity has concluded.

- *Ramp-up*: A ramp-up procedure would be used for geophysical survey equipment capable of adjusting energy levels at the start or re-start of survey activities. Ramp-up of the survey equipment would not begin until the relevant EZs and Buffer Zone has been cleared by the PSOs, as described above. HRG equipment would be initiated at their lowest power output and would be incrementally increased to full power. If any marine mammals are detected within the EZs or Buffer Zone prior to or during ramp-up, the HRG equipment would be shut down (as described below).
- *Shutdown of HRG Equipment*: If an HRG source is active and a marine mammal is observed within or entering a relevant EZ (as described above) an immediate shutdown of the HRG survey equipment would be required. Note this shutdown requirement would be waived for certain genera of small delphinids as described above. Subsequent restart of the HRG equipment would only occur after the marine mammal has either been observed exiting the relevant EZ, or, until an additional time period has elapsed with no further sighting of the animal within the relevant EZ (i.e., 15 minutes for small odontocetes and seals, and 30 minutes for all other

species).

- *Vessel strike avoidance measures*: Separation distances for large whales (500 m North Atlantic Right Whales, 100 m other large whales; 50 m other cetaceans and pinnipeds), restricted vessel speeds including a requirement that all vessel operators comply with 10 kn (18.5 km/hour) or less speed restrictions in any SMA or DMA while underway, and operational maneuvers.
- *Seasonal Operating Requirements*: Vineyard Wind will conduct survey activities in the Cape Cod Bay Mid-Atlantic U.S. Seasonal Management Area (SMA) and Off Race Point SMA only during the months of August and September to ensure sufficient buffer between the SMA restrictions (January to May 15) and known seasonal occurrence of the North Atlantic right whale north and northeast of Cape Cod (fall, winter, and spring). Vineyard Wind will also limit to three the number survey vessels that will operate concurrently from March through June within the lease areas (OCS-A 0501 and 0487) and offshore export cable corridor (OECC) areas north of the lease areas up to, but not including, coastal and bay waters. Another seasonal restriction area south of Nantucket will be in effect from December to February in the area delineated by the DMA that was effective from January 31, 2020 through February 15, 2020. In addition, Vineyard Wind would operate either a single vessel, two vessels concurrently or, for short periods, no more than three survey vessels concurrently in the areas described above during the December-February and March-June timeframes when right whale densities are greatest. The seasonal restrictions described above will help to reduce both the number and intensity of North Atlantic right whale takes.

- *Reporting*: Vineyard Wind will submit a final technical report within 90 days following completion of the surveys. In the event that Vineyard Wind personnel discover an injured or dead marine mammal, Vineyard Wind shall report the incident to the Office of Protected Resources (OPR), NMFS and to the New England/Mid-Atlantic Regional Stranding Coordinator as soon as feasible. In the event of a ship strike of a marine mammal by any vessel involved in the activities covered by the authorization, Vineyard Wind shall report the incident to OPR, NMFS and to the New England/Mid-Atlantic Regional Stranding Coordinator as soon as feasible.

Comments and Responses

A notice of NMFS' proposal to issue a Renewal IHA to Vineyard Wind was published in the **Federal Register** on June 8, 2021 (86 FR 30435). That notice either described, or referenced descriptions of, Vineyard Wind's activity, the marine mammal species that may be affected by the activity, the anticipated effects on marine mammals and their habitat, estimated amount and manner of take, and proposed mitigation, monitoring and reporting measures. NMFS received comments from: 1) a group of environmental non-governmental organizations (ENGOs) including the Natural Resources Defense Council, Conservation Law Foundation, National Wildlife Federation, Defenders of Wildlife, Southern Environmental Law Center, Surfrider Foundation, Mass Audubon, Friends of the Earth, International Fund for Animal Welfare, NY4WHALES, WDC Whale and Dolphin Conservation, Marine Mammal Alliance Nantucket, Gotham Whale, All Our Energy, Seatuck Environmental Association, Inland Ocean Coalition, Nassau Hiking & Outdoor Club, Connecticut Audubon Society, and Cetacean Society international; and 2) Oceana.

The comments and our responses are summarized below.

Comment 1: The ENGOs and Oceana both recommended that NMFS expand upon the statement in the **Federal Register** notice of proposed Renewal IHA (85 FR 30435, June 08, 2021) that "the mean annual North Atlantic right whale densities have slightly increased in the activity area" since the initial IHA was published. They suggest that our qualitative summation of increased North Atlantic right whale densities in the project area likely underestimates the true importance of the area as a year-round core foraging habitat to North Atlantic right whales (Leiter *et al*. 2017; Oleson *et al*. 2020) and that this needs to be more fully explored, considered, and analyzed before an IHA is renewed. The ENGOs stressed that NMFS should be transparent in our decision-making regardless of levels of take and that we must publish the results of the updated analysis. They also stressed that NMFS must ensure undisturbed access to foraging habitat to adequately protect North Atlantic right whales since North Atlantic right whales employs a "high-drag" foraging strategy that enables them to selectively target high-density prey patches, but is energetically expensive.

Response: When assessing the appropriateness of a Renewal IHA NMFS must confirm, among other things, that no new information has been received that would alter the prior analysis. In the **Federal Register** notice of proposed Renewal IHA (85 FR 30435, June 08, 2021), NMFS discussed new information related to North Atlantic right whales including updated density estimates obtained from updated model outputs reported by Roberts *et al*. (2020). These habitat-informed density models offer the most comprehensive evaluation of North Atlantic right whale density along the east coast to date and consider both the spatial and temporal importance of the project area to right whales. These updated density estimates, which incorporated additional sighting data and included increased spatial resolution in the project area, suggest that the North Atlantic right whale densities in the project region slightly increased from 0.105 whales per 100 km^2 to 0.169 whales per 100 km^2. While the increase in density was described,

NMFS acknowledges that the actual updated density estimate was omitted from the **Federal Register** notice of proposed Renewal IHA (85 FR 30435, June 08, 2021) and therefore we have included this information along with the updated unadjusted modeled exposure estimate of 36 individuals in this **Federal Register** notice of the Renewal IHA.

In the proposed and final notices of the initial IHA, we discuss the importance of portions of the Project Area as core habitat for North Atlantic right whales. For example, data indicates that right whales occur at elevated densities in the Project Area south and southwest of Martha's Vineyard in the spring (March-May) and south of Nantucket during winter (December-February) (Roberts *et al*. 2018, Leiter *et al*. 2017, Kraus *et al*. 2016). In addition, consistent aggregations of right whales feeding and possibly mating within or close to these specific areas is such that they have been considered right whale "hotspots" (Leiter *et al*. 2017, Kraus *et al*. 2016). Oleson *et al*. (2020), which was referenced by the commenters but was not available at the time of the initial authorization of this IHA, provides additional evidence that part of the Project Area coincides directly with year-round core foraging habitat south of Martha's Vineyard and Nantucket islands where both visual and acoustic detections of North Atlantic right whales indicate a nearly year-round presence. We have included this information in this **Federal Register** notice of the issued Renewal IHA. Despite these areas being important year-round foraging habitat for right whales, NMFS notes that prey for North Atlantic right whales are mobile and broadly distributed throughout the project area; therefore, North Atlantic right whales are expected to be able to resume foraging once they have moved away from any areas with disturbing levels of underwater noise. There is ample foraging habitat adjacent to the Project Area that is not ensonified by HRG sources. For example, in the fall of 2019 and 2020, North Atlantic right whales were particularly attracted to Nantucket Shoals, located to the east of the Project Area. Furthermore, the spatial acoustic footprint of the survey is very small relative to the spatial extent of the available foraging habitat.

NMFS concluded that there is no new information, including from the reports referenced by the commenters, suggesting that our analysis or findings should change for the Renewal IHA from those reached in the initial IHA. This includes consideration of our take estimate of 10 North Atlantic right whales despite slightly increased densities of right whales in the Project Area and the importance of portions of the Project area as year-round foraging habitat for right whales. Based on findings reported in Vineyard Wind's preliminary monitoring report and the expected mitigating effects from the required mitigation measures on the actual taking of right whales, we have concluded that the updated exposure estimate based on the updated density estimate represents a significant overestimate of the actual potential exposure, and therefore authorize the same amount of take (10 individuals) as proposed in the initial IHA and the **Federal Register** notice of proposed Renewal IHA (85 FR 30435, June 08, 2021). These mitigation measures include the use of two PSO observers at times when HRG equipment is in use, shutdown measures and vessel strike avoidance measures when North Atlantic right whales are sighted within the 500-m EZ (which is at least 2.5 times greater than the predicted Level B harassment threshold distance (195 m)), and seasonal restrictions that limit or prohibit survey activities during times and areas when North Atlantic right whales are found in higher densities. NMFS believes that these measures will minimize the impact that the proposed activities will have on this species, particularly in areas of importance such as year-round foraging habitats, to North Atlantic right whales.

Comment 2: The ENGOs recommended that NMFS incorporate additional data sources into calculations of marine mammal density and take and that NMFS must ensure all available data are used to ensure that any potential shifts in North Atlantic right whale habitat usage are reflected in estimations of marine mammal density and take. The ENGOs asserted in general that the density models used by NMFS do not fully reflect the

abundance, distribution, and density of marine mammals for the U.S. East Coast and therefore result in an underestimate of take.

Response: Habitat-based density models produced by the Duke University Marine Geospatial Ecology Lab (MGEL) (Roberts *et al*. 2016, 2017, 2018, 2020) represent the best available scientific information concerning marine mammal occurrence within the U.S. Atlantic Ocean. Density models were originally developed for all cetacean taxa in the U.S. Atlantic Ocean (Roberts *et al*. 2016); more information, including the model results and supplementary information for each of those models, is available at *seamap.env.duke.edu/models/Duke-EC/*. These models provided key improvements over previously available information, by incorporating additional aerial and shipboard survey data from NMFS and from other organizations collected over the period 1992-2014, incorporating 60 percent more shipboard and 500 percent more aerial survey hours than did previously available models; controlling for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting; and modeling density from an expanded set of 8 physiographic and 16 dynamic oceanographic and biological covariates. In subsequent years, certain models have been updated on the basis of additional data as well as methodological improvements. In addition, a new density model for seals was produced as part of the 2017-18 round of model updates.

Of particular note, Roberts *et al*. (2020) further updated density model results for North Atlantic right whales by incorporating additional sighting data and implementing three major changes: increasing spatial resolution, generating monthly estimates on three time periods of survey data, and dividing the study area into 5 discrete regions. This most recent update—model version nine for North Atlantic right whales—was undertaken with the following objectives (Roberts *et al*. 2020):

- To account for recent changes to right whale distributions, the model should be based on survey data that extend through 2018, or later if possible. In addition to updates from existing collaborators, data should be solicited from two survey programs not used in prior model versions including aerial surveys of the Massachusetts and Rhode Island Wind Energy Areas led by New England Aquarium (Kraus *et al.* 2016), spanning 2011-2015 and 2017-2018 and recent surveys of New York waters, either traditional aerial surveys initiated by the New York State Department of Environmental Conservation in 2017, or digital aerial surveys initiated by the New York State Energy Research and Development Authority in 2016, or both.
- To reflect a view in the right whale research community that spatiotemporal patterns in right whale density changed around the time the species entered a decline in approximately 2010, consider basing the new model only on recent years, including contrasting "before" and "after" models that might illustrate shifts in density, as well as a model spanning both periods, and specifically consider which model would best represent right whale density in the near future;
- To facilitate better application of the model to near-shore management questions, extend the spatial extent of the model farther in-shore, particularly north of New York; and
- Increase the resolution of the model beyond 10 km, if possible.

All of these objectives were met in developing the most recent update to the North Atlantic right whale density model.

As noted above, NMFS has determined that the Roberts *et al*. suite of density models represent the best available scientific information. However, NMFS acknowledges that there will always be additional data that is not reflected in the models and that may inform our analyses, whether because the data were not made available to

the model authors or because the data is more recent than the latest model version for a specific taxon.

The ENGOs pointed to additional data that can be obtained from sightings databases, passive acoustic monitoring efforts, aerial surveys, and autonomous vehicles. The ENGO's pointed specifically to monthly standardized marine mammal aerial surveys flown in the Massachusetts and Rhode Island and Massachusetts Wind Energy Areas by the New England Aquarium from October 2018 through August 2019 and March 2020 through July 2021. The 2018-2019 New England Aquarium study showed that North Atlantic right whale distribution changed seasonally, with several sightings of North Atlantic right whales in Lease Area OSC-A 0522 in the winter, one sighting in Lease Area OSC-A 0501 in the spring, and no other sightings in Vineyard Wind's lease areas during other portions of the year. Information on the results from the 2020-2021 aerial survey is currently unavailable. The commenters also referenced a study funded by the Bureau of Offshore Energy Management (BOEM) using an autonomous vehicle for real-time acoustical monitoring of marine mammals from December 2019 through March 2020 and again from December 2020 through February 2021 on Cox Ledge, located approximately 35 miles east of Montauk Point, New York between Block Island and Martha's Vineyard. Note that only a small portion of BOEM's acoustic study area overlapped with Vineyard Wind's Project Area. Between December 21, 2020 and March 30, 2020 (91 days) North Atlantic right whales were acoustically detected on 13 days and possibly detected on an additional 3 days. No North Atlantic right whales were detected in BOEM's study area between March 25, 2021 and July 01, 2021 (98 days). The data from these recent studies does not indicate that NMFS should alter any of the required mitigation and monitoring requirements, particularly as NMFS considers impacts from these types of survey operations to be near *de minimis* and that Vineyard Wind is already required to adhere to time and area seasonal restrictions. It would be difficult to draw any

qualitative conclusions from these study results given that most of the observations and detections occurred in only small portions of Vineyard Wind's Project Area.

NMFS will review any other recommended data sources that become available to evaluate their applicability in a quantitative sense (*e.g.*, to an estimate of take numbers) and, separately, to ensure that relevant information is considered qualitatively when assessing the impacts of the specified activity on the affected species or stocks and their habitat. NMFS will continue to use the best available scientific information, and we welcome future input from interested parties on data sources that may be of use in analyzing the potential presence and movement patterns of marine mammals, including North Atlantic right whales, in U.S. Atlantic waters. At this time, there are no additional new sources of density information that affects our analyses or determinations.

While the ENGO's referenced additional data, no specific recommendations were made with regard to use of this information in informing the take estimates. Rather, the commenters suggested that NMFS should "collate and integrate these and more recent data sets to more accurately reflect marine mammal presence for future IHAs and other work." NMFS would welcome in the future constructive suggestions as to how these objectives might be more effectively accomplished. NMFS used the best scientific information available at the time the analyses for the proposed and final IHAs were conducted, and has considered all available data, including sources referenced by the commenters, in reaching its determinations in support of issuance of the Renewal IHA requested by Vineyard Wind.

Comment 3: Oceana asserted that NMFS' must use the best available science for assessing North Atlantic right whale abundance estimates. They state that North Atlantic right whales have experienced significant declines in the last decade and that NMFS should use the most recent population estimate to support the IHA which is being considered for renewal, which they state is the Pettis *et al*. (2020) estimate of 356 North

Atlantic right whales. They commented that this estimate is nearly 14 percent lower than the estimate NMFS used in the analysis to support the proposed Renewal IHA.

Response: NMFS agrees that the best available and most recent science should be used for assessing North Atlantic right whale abundance estimates in the Renewal IHA, but disagrees that the Pettis *et al*. (2020) study represents the most recent and best available estimate for North Atlantic right whale abundance. Rather the revised abundance estimate published by Pace (2021) which was used in the proposed Renewal IHA provide the most recent and best available estimate, which suggest improvements to the model currently used to estimate North Atlantic right whale abundance. Specifically, Pace (2021) looked at a different way of characterizing annual estimates of age-specific survival. The results strengthened the case for a change in mean survival rates after 2010-2011, but did not significantly change other current estimates (population size, number of new animals, adult female survival) derived from the model. The estimate reported by Pace (2021) and used in the **Federal Register** notice of proposed Renewal IHA (85 FR 30435, June 08, 2021) and in this Renewal IHA is 368 (95% CI 356-378) whales. Of note, the estimate proposed by Pettis *et al*. (2020) of 356 right whales is only three percent, not 14 percent, lower than this newly available estimate, which NMFS has determined is the most appropriate estimate to use.

Comment 4: The ENGOs asserted that the seasonal restrictions described in the **Federal Register** notice of proposed Renewal IHA (85 FR 30435, June 08, 2021) are not protective enough. They recommended additional seasonal restriction on site assessment and characterization activities in the Project Areas with the potential to harass North Atlantic right whales between November 1, 2021 and April 30, 2022 off the coasts of New York and Connecticut, and from December 1, 2021 through April 30, 2022 off the coasts of Rhode Island and Massachusetts. The ENGOs also requested clarification

regarding whether there would be a complete restriction on survey activities within seasonal restricted areas or that simply a reduction in survey vessels will be required.

Response: NMFS is concerned about the status of the North Atlantic right whale population given that an unusual mortality event (UME) has been in effect for this species since June of 2017 and that there have been a number of recent mortalities. While the ensonified areas contemplated for any single survey vessel are comparatively small and the anticipated resulting effects of exposure relatively lower-level, the potential impacts of multiple survey vessels (up to 8 according to Vineyard Wind) operating simultaneously in areas of higher right whale density are not well-documented and warrant caution.

NMFS reviewed the best available right whale density and abundance data for the planned survey area (Roberts *et al*. 2020, Pace *et al*. 2021). We determined that right whale abundance is significantly higher in the period starting in late winter and extending to late spring in specific sections of the survey area. As described in the initial IHA, based on this information NMFS determined that seasonal restrictions as described in the final IHA and proposed Renewal IHA are both warranted and practicable and thus defined seasonal restriction areas that Vineyard Wind must follow when conducting marine site characterization survey activities.

These restrictions include the requirement that survey activities may only occur in the Cape Cod Bay Seasonal Management Area (SMA) and off of the Race Point SMA during the months of August and September to ensure sufficient buffer between the SMA restrictions (January to May 15) and known seasonal occurrence of right whales north and northeast of Cape Cod (fall, winter, and spring). While there will not be a complete restriction on survey activities, Vineyard Wind will limit to three the number of survey vessels that will operate concurrently from March through June within the lease areas (OCS-A 0501 and 0487) and OECC areas north of the lease areas up to, but not

including, coastal and bay waters. An additional seasonal restriction area was defined in the initial IHA south of Nantucket and will be in effect from December to February in the area delineated by the Dynamic Management Area (DMA or Slow Zone) that was effective from January 31, 2020 through February 15, 2020. DMAs have been established during this time frame in this area for the last several years. DMAs are temporary protection zones that are triggered when three or more whales are sighted within 2-3 miles of each other outside of active SMAs. The size of a DMA is larger if more whales are present.

The ENGOs recommended that additional restrictions be put into place, but they do not provide any evidence or support for the additional restrictions they recommend other than mentioning that North Atlantic right whales are expected to be present in the Project Area year-round. While we acknowledge that the North Atlantic right whale densities temporally fluctuate off the coasts of New York and Connecticut and off the coasts of Rhode Island and Massachusetts and that North Atlantic right whales could be in the Project Area throughout the year, we have determined the seasonal restrictions described in the initial IHA and included in the Renewal IHA, paired with the other required mitigation and monitoring measures, are sufficiently protective. This is supported by findings from Vineyard Wind's preliminary monitoring report, which demonstrated that only four sightings of seven North Atlantic right whales were observed in the initial year of survey activities, all of which were observed on a single day (December 20, 2020). We have determined that additional seasonal restrictions are not warranted since NMFS considers impacts from these types of survey operations to be near *de minimis.* Further, the commenters have not demonstrated that additional seasonal restrictions would result in a net benefit given the cost and impracticability of implementing such measures.

Vineyard Wind is required to operate no more than three survey vessels concurrently in the areas described above during the December-February and March-June timeframes when right whale densities are greatest (*i.e.*, a reduction in the number of vessels is required rather than a complete restriction of survey activities). The seasonal restrictions described above will help to reduce both the number and intensity of right whale takes. Regarding practicability, the timing of Vineyard Wind's surveys is driven by a complex suite of factors including availability of vessels and equipment (which are used for other surveys and by other companies), other permitting timelines, and the timing of certain restrictions associated with fisheries gear, among other things. Vineyard Wind revised their initial survey plan such to accommodate these measures and satisfy their permitting and operational obligations. Therefore, NMFS determined that this required mitigation measure is sufficient to ensure the least practicable adverse impact on species or stocks and their habitat.

Comment 5: The ENGOs stated that the agency's assumptions regarding mitigation effectiveness are unfounded and cannot be used to justify any reduction in the number of takes authorized as was done for North Atlantic right whales. The ENGOs do not believe that Vineyard Wind can successfully mitigate Level B harassment simply through the implementation of the IHA mitigation measures currently required. The reasons cited include: (1) the agency's reliance on a 160 dB threshold for behavioral harassment that commenters assert is not supported by the best available scientific information; (2) the reliance on the assumption that marine mammals will avoid sound despite studies that have found avoidance behavior is not generalizable among species and contexts; and (3) until the effectiveness of mitigation measures are determined, it is premature to include any related assumptions to reduce the numbers of marine mammal takes.

Response: The three comments provided by the ENGOs are addressed individually below.

(1) NMFS acknowledges that the potential for behavioral response to an anthropogenic source is highly variable and context-specific and acknowledges the potential for Level B harassment at exposures to received levels below 160 dB rms. Alternatively, NMFS acknowledges the potential that not all animals exposed to received levels above 160 dB rms will respond in ways constituting behavioral harassment. There are a variety of studies indicating that contextual variables play a very important role in response to anthropogenic noise, and the severity of effects are not necessarily linear when compared to a received level (RL). The commenters cited several studies (Nowacek *et al*. 2004, Kastelein *et al*. 2012 and 2015, Gomez *et al*. 2016, Tyack & Thomas 2019) that showed there were behavioral responses to sources below the 160 dB threshold, but also acknowledge the importance of context in these responses. For example, Nowacek *et al*. (2004) reported the behavior of five out of six North Atlantic right whales was disrupted at RLs of only 133-148 dB re 1 μPa (returning to normal behavior within minutes) when exposed to an alert signal. However, the authors also reported that none of the whales responded to noise from transiting vessels or playbacks of ship noise even though the RLs were at least as strong, and contained similar frequencies, to those of the alert signal. The authors state that a possible explanation for why whales responded to the alert signal and did not respond to vessel noise is that the whales may have been habituated to vessel noise, while the alert signal was a novel sound. In addition, the authors noted differences between the characteristics of the vessel noise and alert signal which may also have played a part in the differences in responses to the two noise types. Therefore, it was concluded that the signal itself, as opposed to the RL, was responsible for the response. DeRuiter *et al*. (2013) also indicate that variability of responses to acoustic stimuli depends not only on the species receiving the sound and the sound

source, but also on the social, behavioral, or environmental contexts of exposure. Finally, Gong *et al*. (2014) highlighted that behavioral responses depend on many contextual factors, including range to source, RL above background noise, novelty of the signal, and differences in behavioral state. Similarly, Kastelein *et al*. (2015, cited in the letter) examined behavioral responses of a harbor porpoise to sonar signals in a quiet pool, but stated behavioral responses of harbor porpoises at sea would vary with context such as social situation, sound propagation, and background noise levels.

NMFS uses 160 dB (rms) as the exposure level for estimating Level B harassment takes, while acknowledging that the 160 dB rms step-function approach is a simplistic approach. The commenters suggested that our use of the 160-dB threshold implies that we do not recognize the science indicating that animals may react in ways constituting behavioral harassment when exposed to lower received levels (RL). However, we do recognize the potential for Level B harassment at exposures to RLs below 160 dB rms, in addition to the potential that animals exposed to RLs above 160 dB rms will not respond in ways constituting behavioral harassment (*e.g.,* Malme *et al.* 1983, 1984, 1985, 1988; McCauley *et al.* 1998, 2000a, 2000b; Barkaszi *et al.* 2012; Stone 2015; Gailey *et al.* 2016; Barkaszi and Kelly 2018). These comments appear to evidence a misconception regarding the concept of the 160-dB threshold. While it is correct that in practice it works as a step-function, *i.e.*, animals exposed to received levels above the threshold are considered to be "taken" and those exposed to levels below the threshold are not, it is in fact intended as a sort of mid-point of likely behavioral responses (which are extremely complex depending on many factors including species, noise source, individual experience, and behavioral context). What this means is that, conceptually, the function recognizes that some animals exposed to levels below the threshold will in fact react in ways that are appropriately considered take, while others that are exposed to levels above the threshold will not. Use of the 160-dB threshold allows for a simplistic quantitative

estimate of take, while we can qualitatively address the variation in responses across different received levels in our discussion and analysis.

Overall, we emphasize the lack of scientific consensus regarding what criteria might be more appropriate. Defining sound levels that disrupt behavioral patterns is difficult because responses depend on the context in which the animal receives the sound, including an animal's behavioral mode when it hears sounds (*e.g.*, feeding, resting, or migrating), prior experience, and biological factors (*e.g.*, age and sex). Other contextual factors, such as signal characteristics, distance from the source, and signal to noise ratio, may also help determine response to a given received level of sound. Therefore, levels at which responses occur are not necessarily consistent and can be difficult to predict (Southall *et al*. 2007; Ellison *et al*. 2012; Bain and Williams 2006). Even experts have not previously been able to suggest specific new criteria due to these difficulties (*e.g.*, Southall *et al*. 2007; Gomez *et al*. 2016). Further, we note that the sounds sources and the equipment used in the specified activities are outside (higher than) of the most sensitive range of mysticete hearing.

There is currently no agreement on these complex issues, and NMFS followed the practice at the time of submission and review of this analysis in assessing the likelihood of disruption of behavioral patterns by using the 160 dB threshold. This threshold has remained in use in part because of the practical need to use a relatively simple threshold based on available information that is both predictable and measurable for most activities. We note that the seminal review presented by Southall *et al.* (2007) did not suggest any specific new criteria due to lack of convergence in the data. NMFS is currently evaluating available information towards development of guidance for assessing the effects of anthropogenic sound on marine mammal behavior, such as a dose-response curve presented by Tyack and Thomas (2017) and referenced by the commenters. However, undertaking a process to derive defensible exposure-response relationships is complex

(*e.g*., NMFS previously attempted such an approach, but is currently re-evaluating the approach based on input collected during peer review of NMFS (2016)). A recent systematic review by Gomez *et al*. (2016) referenced by the commenters was unable to derive criteria expressing these types of exposure-response relationships based on currently available data.

NMFS acknowledges that there may be methods of assessing likely behavioral response to acoustic stimuli that better capture the variation and context-dependency of those responses than the simple 160 dB step-function used here, and that an approach reflecting a more complex probabilistic function may more effectively represent the known variation in responses at different levels due to differences in the receivers, the context of the exposure, and other factors. However, there is no agreement on what that method should be or how more complicated methods may be implemented by applicants. NMFS is committed to continuing its work in developing updated guidance with regard to acoustic thresholds, but pending additional consideration and process is reliant upon an established threshold that is reasonably reflective of available science.

(2) The commenters disagreed with NMFS' assumption that marine mammals avoid sound sources. The ENGOs claimed that studies have not found avoidance behavior to be generalizable among species and contexts. Importantly, the commenters mistakenly seem to believe that the NMFS' does not consider avoidance as a take, and that the concept of avoidance is used as a mechanism to reduce overall take—this is not the case. Avoidance of loud sounds is a well-documented behavioral response, and NMFS often accordingly accounts for this avoidance by reducing the number of injurious exposures, which would occur in very close proximity to the source and necessitate a longer duration of exposure. However, when Level A harassment takes are reduced in this manner, they are changed to Level B harassment takes, in recognition of the fact that this avoidance or other behavioral responses occurring as a result of these exposures are

still take. NMFS does not reduce the overall amount of take as a result of avoidance or rely in any way on assumptions related to avoidance.

(3) The comments stated that it is premature to include any related assumptions to reduce the numbers of marine mammal takes until the effectiveness of mitigation measures are determined. Vineyard Wind's Preliminary Monitoring Report demonstrates that the number of takes did not exceed those authorized based on the mitigation measures implemented in the initial IHA and which are carried over in the Renewal IHA during Vineyard Wind's survey activities. During the reported marine mammal observations, no behavior was observed that would be considered consistent with a behavioral response to harassment (*i.e.*, rapid swimming away from the sound source or vessel; repeated fin slaps or breaches; notable changes in behavior as a result of vessel approach), and no animals demonstrated signs of harm.

While we acknowledge the commenters' concerns regarding unfounded assumptions concerning the effectiveness of mitigation requirements in reducing actual take of North Atlantic right whales, it is also important to also acknowledge the circumstances of a particular action. In most cases, the maximum estimated Level B harassment zone associated with commonly-used acoustic sources is approximately 195 m, whereas the typically-required shutdown zone for North Atlantic right whales is 500 m. Vineyard Wind reported only four sightings of North Atlantic right whales (seven individuals) in the initial year of survey activities, all of which were observed on a single day (December 20, 2020) and outside both the estimated 195-m Level B harassment zone and the 500-m EZ for North Atlantic right whales (closest approaches were > 900 m). It is also important to note that these observations did not all occur during actual use of the source for which this zone is estimated, and that the actual zone at the time of observation could have been smaller. Therefore, for North Atlantic right whales, NMFS expects that required mitigation measures in the Renewal IHA will indeed be effective in reducing

actual take below the estimated amount, which typically does not account for the beneficial effects of mitigation.

Comment 6: Oceana suggested that NMFS should fully consider both the use of the area and the effects of both acute and chronic stressors on the health and fitness of North Atlantic right whales. Oceana asserts that chronic stressors are an emerging concern for North Atlantic right whale conservation and recovery and a recent peer-reviewed study suggests that a range of stresses on North Atlantic right whales have stunted growth rates (Stewart *et al*. 2021). Oceana noted that disruptive site characterization activities may do more than startle or spook North Atlantic right whales in this area and may cause chronic stress to the whales or cause the whales to seek other feeding areas at great energetic cost, decreasing their fitness, body condition and ability to successfully feed, socialize and mate.

Response: NMFS agrees with Oceana that both acute and chronic stressors are of concern for North Atlantic right whale conservation and recovery. We recognize that acute stress from acoustic exposure is one potential impact of these surveys, and that chronic stress can have fitness, reproductive, etc. impacts at the population-level scale. NMFS has carefully reviewed the best available scientific information in assessing impacts to marine mammals, and recognizes that the surveys have the potential to impact marine mammals through behavioral effects, stress responses, and auditory masking. However, NMFS does not expect that the generally short-term, intermittent, and transitory marine site characterization survey activities would create conditions of acute or chronic acoustic exposure leading to long-term physiological stress responses in marine mammals. NMFS has also prescribed a robust suite of mitigation measures, such as time-area limitations and extended distance shutdowns for certain species that are expected to further reduce the duration and intensity of acoustic exposure, while limiting the potential severity of any possible behavioral disruption. The potential for chronic

stress was evaluated in making the determinations presented in NMFS's negligible impact analyses.

Comment 7: Oceana asserted that NMFS must fully consider the discrete effects of each activity and the cumulative effects of the suite of approved, proposed and potential activities on marine mammals and North Atlantic right whales in particular and ensure that the cumulative effects are not excessive before issuing or renewing an IHA. They noted that this was specifically important given the large number of offshore wind-related activities being considered in the northeast region.

Response: Neither the MMPA nor NMFS' codified implementing regulations call for consideration of other unrelated activities and their impacts on populations. The preamble for NMFS' implementing regulations (54 FR 40338; September 29, 1989) states in response to comments that the impacts from other past and ongoing anthropogenic activities are to be incorporated into the negligible impact analysis via their impacts on the baseline. Consistent with that direction, 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 1989 implementing regulations also addressed public comments regarding cumulative effects from future, unrelated activities. There NMFS stated that such effects are not considered in making findings under section 101(a)(5) concerning negligible impact. In this case, both this Renewal IHA, as well as other IHAs currently in effect or proposed within the specified geographic region, are appropriately considered an unrelated activity relative to the others. The IHAs are unrelated in the sense that they are discrete actions under section 101(a)(5)(D), issued to discrete applicants.

Section 101(a)(5)(D) of the MMPA requires NMFS to make a determination that the take incidental to a “specified activity” will have a negligible impact on the affected

species or stocks of marine mammals. NMFS' implementing regulations require applicants to include in their request a detailed description of the specified activity or class of activities that can be expected to result in incidental taking of marine mammals. 50 CFR 216.104(a)(1). Thus, the "specified activity" for which incidental take coverage is being sought under section 101(a)(5)(D) is generally defined and described by the applicant. Here, Vineyard Wind was the applicant for the Renewal IHA, and we are responding to the specified activity as described in that application and request for renewal (and making the necessary findings on that basis). Through the response to public comments in the 1989 implementing regulations, we also indicated (1) that NMFS would consider cumulative effects that are reasonably foreseeable when preparing a NEPA analysis, and (2) that reasonably foreseeable cumulative effects would also be considered under section 7 of the ESA for ESA-listed species. In this case, cumulative impacts have been adequately addressed under NEPA in prior environmental analyses that form the basis for NMFS' determination that this action is appropriately categorically excluded from further NEPA analysis.

NMFS has previously written Environmental Assessments (EA) that addressed cumulative impacts related to substantially similar activities, in similar locations, *e.g.*, 2019 Ørsted EA for survey activities offshore southern New England; 2019 Avangrid EA for survey activities offshore North Carolina and Virginia; 2018 Deepwater Wind EA for survey activities offshore Delaware, Massachusetts, and Rhode Island.

Separately, cumulative effects were analyzed as required through NMFS' required intra-agency consultation under section 7 of the ESA, which determined that NMFS' action of issuing the IHA or Renewal IHA is not likely to adversely affect listed marine mammals or their critical habitat.

Comment 8: The ENGOs stated that the recent designation of Gulf of Maine humpback whales as a strategic stock should be explicitly considered by NMFS as part of the Renewal IHA.

Response: NMFS acknowledges that the status of the Gulf of Maine humpback whale stock changed from non-strategic to strategic in the 2020 U.S. Atlantic and Gulf of Mexico Draft Marine Mammal Stock Assessment Report (available online at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports*) and that we omitted this status change in the **Description of Marine Mammals** in the **Federal Register** notice of the proposed Renewal IHA (85 FR 30435, June 08, 2021). We have revised the **Federal Register** notice of the authorized Renewal IHA to include this change.

NMFS does not expect that the generally short-term, intermittent, and transitory HRG activities and the minor amount of take of humpback whales by Level B harassment (up to 2.1 percent of the population) would have meaningful impacts on the reproduction or survival on any individual humpback whale and, therefore, no impacts at the stock level are expected. Moreover, the population of interest is the West Indies Distinct Population Segment (DPS) of which the Gulf of Maine stock is just one feeding population. Therefore, this information regarding the strategic listing of the Gulf of Maine humpback whale stock does not change our initial analysis and determination.

Comment 9: The ENGO's noted that harbor porpoises are particularly sensitive to noise, and, therefore, impacts to this species must be minimized and mitigated to the full extent practicable during offshore wind siting and development activities.

Response: Harbor porpoises are classified as high-frequency cetaceans (NMFS 2018) and are the hearing group with the lowest PTS onset thresholds, with maximum susceptibility to frequencies between 20 and 40 kHz (susceptibility decreases with outside this frequency range). However, the largest modeled distance to the Level A

harassment threshold for HF cetaceans was 60 m. Furthermore, this is a conservative assessment given that the model used to determine PTS isopleths treats all devices as impulsive and results in significant overestimates for non-impulsive devices, since PTS onset thresholds are lower for impulsive sources compare to non-impulsive sources. Level A harassment would also be more likely to occur at close approach to the sound source or as a result of longer duration exposure to the sound source, and mitigation measures—including a 100 m exclusion zone (EZ) for harbor porpoises—are expected to minimize the potential for close approach or longer duration exposure to active HRG sources. In addition, harbor porpoises are known to be behaviorally sensitive species, in that they respond to comparatively lower received levels and are known to avoid vessels and other sound sources and, therefore, harbor porpoises would also be expected to avoid a sound source prior to that source reaching a level that would result in injury (Level A harassment). Therefore, NMFS has determined that take of harbor porpoises or any other animal by Level A harassment is unlikely to occur and has not authorized any such takes. Any takes by Level B harassment are anticipated to be limited to brief startling reactions and/or temporary avoidance of the Project Area. Further, appropriate mitigation measures have been included to ensure the least practicable adverse impact on harbor porpoises and other marine mammal species. No harbor porpoises were observed by Vineyard Wind in their initial year of survey activities according to their preliminary monitoring report, further supporting the potential for harassment to be discountable.

Comment 10: The ENGOs recommended that NMFS should prohibit the commencement of geophysical surveys at night to maximize the probability that marine mammals are detected and confirmed clear of the EZs. The commenters asserted that initiation of work should occur with ramp-up, only during daylight hours.

Response: NMFS acknowledges the limitations inherent in detection of marine mammals at night. However, no injury is expected to result even in the absence of

mitigation, given the characteristics of the sources planned for use (supported by the very small estimated Level A harassment zones; *i.e.*, < 60 m). The ENGOs do not provide any support for the apparent contention that injury is a potential outcome of these activities. Regarding Level B harassment, any potential impacts would be limited to short-term behavioral responses, as described in greater detail herein. The commenters establish that the status of North Atlantic right whales in particular is precarious. NMFS agrees in general with the discussion of this status provided by the commenters. Note that NMFS considers impacts from this category of survey operations to be near *de minimis*, with the potential for Level A harassment for any species to be discountable and the severity of Level B harassment (and, therefore, the impacts of the take event on the affected individual), if any, to be low. NMFS is also requiring Vineyard Wind to deploy two PSOs during nighttime hours who must have access to night-vision equipment (*i.e.,* night-vision goggles and/or infrared technology). Given these factors, NMFS does not believe that there is a need for more restrictive mitigation requirements.

Restricting surveys in the manner suggested by the commenters may reduce marine mammal exposures by some degree in the short term, but would not result in any significant reduction in either intensity or duration of noise exposure. Vessels would also potentially be on the water for an extended time introducing noise into the marine environment. The restrictions recommended by the commenters could result in the surveys spending increased time on the water, which may result in greater overall exposure to sound for marine mammals; thus the commenters have not demonstrated that such a requirement would result in a net benefit. Furthermore, restricting the ability of the applicant to begin operations only during daylight hours would have the potential to result in lengthy shutdowns of the survey equipment, which could result in the applicant failing to collect the data they have determined is necessary and, subsequently, the need to conduct additional surveys in the future. This would result in significantly increased

costs incurred by the applicant. Thus the restriction suggested by the commenters would not be practicable for the applicant to implement. In consideration of the likely effects of the activity on marine mammals absent mitigation, potential unintended consequences of the measures as proposed by the commenters, and practicability of the recommended measures for the applicant, NMFS has determined that restricting operations as recommended is not warranted or practicable in this case.

Comment 11: Oceana recommended that when HRG surveys are safe to resume after a shutdown event, the surveys should be required to use a soft start, ramp-up procedure to encourage any nearby marine life to leave the area.

Response: NMFS agrees with this recommendation and included in the **Federal Register** notice of the proposed IHA (85 FR 7952, February 02, 2020), the initial IHA (85 FR 26940, May 05, 2020), the proposed Renewal IHA (85 FR 30435, June 08, 2021) and this final Renewal IHA a stipulation that when technically feasible, survey equipment must be ramped up at the start or restart of survey activities. Ramp-up must begin with the power of the smallest acoustic equipment at its lowest practical power output appropriate for the survey. When technically feasible the power must then be gradually turned up and other acoustic sources added in a way such that the source level would increase gradually.

Comment 12: Based on the assertion that the 160 dB threshold for behavioral harassment is not supported by best available scientific information and grossly underestimates Level B take, the ENGOs recommended that NMFS establish an EZ of 1,000 m around each vessel conducting activities with noise levels that they assert could result in injury or harassment to North Atlantic right whales, and a minimum EZ of 500 m for all other large whale species and strategic stocks of small cetaceans. Oceana also recommended that zones for North Atlantic right whales extend at least 1,000 m, but did not provide reasoning for this zone size. The ENGOs further note that they consider

source levels greater than 180 dB re 1 μPa (SPL) at 1-meter at frequencies between 7 Hz and 35 kHz to be potentially harmful to low-frequency cetaceans.

Response: NMFS disagrees with this recommendation and the assertion that the 160 dB threshold for behavioral harassment is not supported by best available scientific information and grossly underestimates take by Level B harassment (see Comment 5 for a discussion regarding why NMFS uses the 160 dB threshold). It is unclear to NMFS how the commenters determined that source levels greater than 180 dB re 1 μPa (SPL) are potentially harmful to low-frequency cetaceans. NMFS historically applied a received level (not source level) root mean square (rms) threshold of 180 dB SPL as the potential for marine mammals to incur PTS (*i.e.*, Level A (injury) harassment); however, in 2016, NMFS published it *Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing* which updated the 180 dB SPL Level A harassment threshold. Since that time, NMFS has been applying dual threshold criteria based on both peak and a weighted (to account for marine mammal hearing) cumulative sound exposure level. NMFS released a revised version of the Technical Guidance in 2018. We encourage the ENGOs to review the Technical Guidance available at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance* to inform future reviews of any proposed IHA on which they may wish to comment. As described in the Estimated Take section, NMFS has established a PTS (Level A harassment) threshold of 183 dB cumulative SEL for low frequency specialists, and a right whale would need to approach within 2 meters of the source to potentially incur PTS from the largest source.

Regarding the shutdown zone recommendation, we note that the 500-m EZ for North Atlantic right whales exceeds the modeled distance to the largest 160-dB Level B harassment isopleth distance (195 m) by a substantial margin. Given that calculated Level B harassment isopleths are likely conservative, and NMFS considers impacts from HRG

survey activities to be near *de minimis*, a 100-m shutdown for other marine mammal species (including large whales and strategic stocks of small cetaceans) is sufficiently protective to effect the least practicable adverse impact on those species and stocks. Further, as discussed in Comment 10, no injury is expected to result even in the absence of mitigation, given the characteristics of the sources planned for use (supported by the very small estimated Level A harassment zones; *i.e.*, < 60 m).

Comment 13: Oceana recommended that a shutdown of HRG equipment be required should a North Atlantic right whale or other protected species enter an EZ, unless necessary for human safety. They further recommended that if and when such an exemption occurs the project must immediately notify NMFS with reasons and explanation for exemption and a summary of the frequency of these exceptions must be publicly available to ensure that these are the exception rather than the norm for the project.

Response: There are several shutdown requirements described in the **Federal Register** notice of the proposed IHA (85 FR 7952, February 02, 2020), the initial IHA (85 FR 26940, May 05, 2020), the proposed Renewal IHA (85 FR 30435, June 08, 2021) and which are included in this final Renewal IHA, including the stipulation that geophysical survey equipment must be immediately shut down if any marine mammal is observed within or entering the relevant EZs while geophysical survey equipment is operational. There is no exemption for human safety and it is unclear what exemption the commenter is referring to. In regards to reporting, Vineyard Wind must notify NMFS if a North Atlantic right whale is observed at any time by any project vessels during surveys or during vessel transit. Additionally, Vineyard Wind is required to report the relevant survey activity information, such as such as the type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.*, pre-clearance survey, ramp-up, shutdown, end of operations, etc.) as well as the estimated

distance to an animal and its heading relative to the survey vessel at the initial sighting and survey activity information. As documented in Vineyard Wind's preliminary monitoring report for the surveys completed under the initial IHA authorization (available on our website at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*), except for instances of voluntary approaches by delphinids, there were no instances where marine mammals were observed within the required shutdown zone and shutdown procedures were not implemented. If a right whale is detected within the EZ before a shutdown is implemented, the right whale and its distance from the sound source, including whether it is within the Level B or Level A harassment zones, would be reported in Vineyard Wind's final monitoring report and made publically available on our website. Vineyard Wind is required to immediately notify NMFS of any sightings of North Atlantic right whales and report upon survey activity information so that comment is not applicable to this Renewal IHA.

Comment 14: The ENGOs and Oceana recommended that a combination of visual monitoring by PSOs and PAM should be used at all times that survey work is underway in order to monitor exclusion zones and maximize the detection of protected species and stocks. The ENGOs also mentioned that while the previously issued IHA indicated that Vineyard Wind will voluntarily employ PAM to support monitoring at night, there is no reference to PAM in the "Monitoring Measures" section of that document, nor the proposed Renewal IHA and requested that this measure be clarified by NMFS.

Response: The foremost concern expressed by the ENGOs and Oceana in making the recommendation to require use of PAM is with regard to North Atlantic right whales. However, the commenters do not explain why they expect that PAM would be effective in detecting vocalizing mysticetes. It is generally well-accepted fact that, even in the absence of additional acoustic sources, using a towed passive acoustic sensor to detect baleen whales (including right whales) is not typically effective because the noise from

the vessel, the flow noise, and the cable noise are in the same frequency band and will mask the vast majority of baleen whale calls. Vessels produce low-frequency noise, primarily through propeller cavitation, with main energy in the 5-300 Hertz (Hz) frequency range. Source levels range from about 140 to 195 decibel (dB) re 1 μPa (micropascal) at 1 m (NRC 2003, Hildebrand 2009), depending on factors such as ship type, load, and speed, and ship hull and propeller design. Studies of vessel noise show that it appears to increase background noise levels in the 71-224 Hz range by 10-13 dB (Hatch *et al.* 2012, McKenna *et al.* 2012, Rolland *et al.* 2012). PAM systems employ hydrophones towed in streamer cables approximately 500 m behind a vessel. Noise from water flow around the cables and from strumming of the cables themselves is also low-frequency and typically masks signals in the same range. Experienced PAM operators participating in a recent workshop (Thode *et al.* 2017) emphasized that a PAM operation could easily report no acoustic encounters, depending on species present, simply because background noise levels rendered any acoustic detection impossible. The same workshop report stated that a typical eight-element array towed 500 m behind a vessel could be expected to detect delphinids, sperm whales, and beaked whales at the required range, but not baleen whales, due to expected background noise levels (including seismic noise, vessel noise, and flow noise).

There are several additional reasons why we do not agree that use of PAM is warranted for 24-hour HRG surveys such as the one planned by Vineyard Wind. While NMFS agrees that PAM can be an important tool for augmenting detection capabilities in certain circumstances, its utility in further reducing impact for Vineyard Wind's HRG survey activities is limited. First, for this activity, the area expected to be ensonified above the Level B harassment threshold is relatively small (a maximum of 195 m)—this reflects the fact that, to start with, the source level is comparatively low and the intensity of any resulting impacts would be lower level and, further, it means that inasmuch as

PAM will only detect a portion of any animals exposed within a zone, the overall probability of PAM detecting an animal in the harassment zone is low—together these factors support the limited value of PAM for use in reducing take with smaller zones. PAM is only capable of detecting animals that are actively vocalizing, while many marine mammal species vocalize infrequently or during certain activities, which means that only a subset of the animals within the range of the PAM would be detected (and potentially have reduced impacts). Additionally, localization and range detection can be challenging under certain scenarios. For example, odontocetes are fast moving and often travel in large or dispersed groups which makes localization difficult.

Given that the effects to marine mammals from the types of surveys authorized in this IHA are expected to be limited to low level behavioral harassment even in the absence of mitigation, the limited additional benefit anticipated by adding this detection method (especially for right whales and other low frequency cetaceans, species for which PAM has limited efficacy), and the cost and impracticability of implementing a full-time PAM program, we have determined the current requirements for visual monitoring are sufficient to ensure the least practicable adverse impact on the affected species or stocks and their habitat. However, we note that Vineyard Wind has stated their intention to voluntarily implement PAM during night operations as an added precautionary measure even though this is not a NMFS requirement.

Comment 15: The ENGOs recommended that the passive acoustic monitors for this and future wind development projects should be part of a migratory corridor-wide network of passive acoustic monitors organized by NOAA and BOEM in collaboration with state governments as well as private, academic, and non-profit partners. They also recommended that NMFS should also advance a robust and effective near real-time monitoring and mitigation system for North Atlantic right whales and other endangered and protected species that will be more responsive to the ongoing dynamic species

distributional shifts resulting from climate change, as well as provide more flexibility to developers during offshore wind energy development.

Response: NMFS is generally supportive of these concepts. A network of near real-time baleen whale monitoring devices are active or have been tested in portions of New England and Canadian waters. These systems employ various digital acoustic monitoring instruments which have been placed on autonomous platforms including slocum gliders, wave gliders, profiling floats and moored buoys. Systems that have proven to be successful will likely see increased use as operational tools for many whale monitoring and mitigation applications. In 2020, NMFS convened a workshop to address objectives related to monitoring North Atlantic right whales. The NMFS publication by Oleson *et al*. (2020) titled "Technical Memorandum NMFS-OPR-64: North Atlantic Right Whale Monitoring and Surveillance: Report and Recommendations of the National Marine Fisheries Service's Expert Working Group", and available at: *https://www.fisheries.noaa.gov/resource/document/north-atlantic-right-whale-monitoring-and-surveillance-report-and-recommendations*, summarizes information from the workshop and presents the Expert Working Group's recommendations for a comprehensive monitoring strategy to guide future analyses and data collection. Among the numerous recommendations found in the report, the Expert Working Group encouraged the widespread deployment of auto-buoys to provide near real-time detections of North Atlantic right whale calls that visual survey teams can then respond to for collection of identification photographs or biological samples.

In regards to the current Renewal IHA, NMFS cannot require Vineyard Wind to be a part of such monitoring networks until such a network of monitoring devices is formalized. However, NMFS will consider implementing such measures in the future should such a network be developed.

Comment 16: The ENGOs recommended that Vineyard Wind must employ a minimum of four PSOs following a two-on/two-off rotation, each responsible for scanning no more than 180° of the horizon during both daylight and nighttime hours, while Oceana recommended that all vessels associated with the proposed Vineyard Wind marine site characterization should be required to carry and use PSOs at all times when underway. Both commenters also recommended that infrared equipment should be during daylight hours to maximize the probability of detection of marine mammals. The ENGOs requested that NMFS clarify what visual monitoring measures are required and/or will be employed by Vineyard Wind to monitor the exclusion, buffer, and monitoring zones during daylight hours, poor visibility conditions, and at night.

Response: NMFS typically requires that a single PSO must be stationed at the highest vantage point and engaged in general 360-degree scanning during daylight hours. Although NMFS acknowledges that the single PSO cannot reasonably maintain observation of the entire 360-degree area around the vessel, it is reasonable to assume that the single PSO engaged in continual scanning of such a small area (*i.e.*, 500-m EZ, which is greater than the maximum 195-m harassment zone) will be successful in detecting marine mammals that are available for detection at the surface. Despite this, Vineyard Wind has committed to a minimum of two NMFS-approved PSOs on duty and conducting visual observations on all survey vessels at all times when HRG survey equipment is in use *(i.e.*, daylight and nighttime operations). NMFS has analyzed the potential for incidental take resulting from Vineyard Wind's activity and have determined that based on the nature of the activities, and in consideration of the mitigation measures included in the initial IHA and the Renewal IHA, the potential for incidental take when HRG activities are not operational is so low as to be discountable.

The monitoring reports submitted to NMFS have demonstrated that PSOs active only during daylight operations are able to detect marine mammals and implement

appropriate mitigation measures. Nevertheless, as night vision technology has continued to improve, NMFS has adapted its practice, and two PSOs are required to be on duty at night on source vessels. NMFS included a requirement in the final IHA and the Renewal IHA that night-vision equipment (*i.e.*, night-vision goggles with thermal clip-ons and infrared/thermal imaging technology) must be available for use. Survey operators are not required to provide PSOs with infrared devices during the day but observers are not prohibited from employing them. Given that use of infrared devices for detecting marine mammals during the day has been shown to be helpful under certain conditions, NMFS will consider requiring them to be made accessible for daytime PSOs. NMFS is also requiring that all PSOs be equipped with reticulated binoculars and have the ability to estimate distances to marine mammals located in proximity to the vessel and/or EZs using range finders based on conditions and visibility to support the sighting and monitoring of marine species. The visual monitoring measures required in the Renewal IHA are identical to those required in the initial IHA and were explained in detail in the associated notices (85 FR 7952, February 02, 2020; 85 FR 26940, May 05, 2020). We have determined that the PSO requirements in the IHA are sufficient to ensure the least practicable adverse impact on the affected species or stocks and their habitat.

Comment 17: The ENGOs and Oceana both expressed concerns that the proposed Renewal IHA sets no requirement to minimize the impacts of underwater noise through the use of best available technology and other methods to minimize sound levels from geophysical surveys. The ENGOs recommended that NMFS should require Vineyard Wind to select sub-bottom profiling systems for survey activities, and operate those systems at power settings that achieve the lowest practicable source level for the objective. Oceana recommended that to be consistent with the requirement to achieve "the least practicable impact on such species or stock and its habitat," the IHA must include conditions for the survey activities that will first avoid adverse effects on North

Atlantic right whales in and around the survey site and then minimize and mitigate the effects that cannot be avoided. They state that this should include a full assessment of which activities, technologies and strategies are truly necessary to provide information to inform development of Vineyard Wind and which are not critical. If, for example, a lower impact technique or technology will provide necessary information about the site without adverse effects, Oceana recommended that technique or technology should be permitted while other tools with more frequent, intense or long-lasting effects should be prohibited. In general, the ENGOs and Oceana asserted that NMFS must require that all IHA applicants minimize the impacts of underwater noise to the fullest extent feasible, including through the use of best available technology and methods to minimize sound levels from geophysical surveys.

Response: The MMPA requires that an IHA include measures that will effect the least practicable adverse impact on the affected species and stock and, in practice, NMFS agrees that the IHA should include conditions for the survey activities that will first avoid adverse effects on North Atlantic right whales in and around the survey site, where practicable, and then minimize the effects that cannot be avoided. NMFS has determined that the Renewal IHA meets this requirement to effect the least practicable adverse impact. Oceana does not make any specific recommendations of measures to add to the Renewal IHA other than assessing which technologies and strategies are truly necessary to provide information to inform development of Vineyard Wind. While the ENGOs recommend the use of sub-bottom profiling systems, the Vineyard Wind energy developers selected the equipment necessary during HRG surveys to achieve their objectives (which includes shallow sub-bottom profilers). As part of the analysis for all marine site characterization survey IHAs, NMFS evaluated the effects expected as a result of use of the specified activity (*i.e.*, the equipment described here), made the necessary findings, and imposed mitigation requirements sufficient to achieve the least

practicable adverse impact on the affected species and stocks of marine mammals. It is not within NMFS' purview to make judgments regarding what constitutes the “lowest practicable source level” for an operator's survey objectives or the appropriate techniques or technologies for an operator's survey objectives.

Comment 18: The ENGOs and Oceana both generally recommended that NMFS require all vessels of all sizes associated with the proposed survey activities to speeds less than 10 kn at all times with no exemptions due to the risk of ship strikes to North Atlantic right whales and other large whales. The ENGOs requested clarification regarding whether the requirement that project-related vessels of any size limit speeds to 10 kn or less within active SMAs or DMAs was still applicable to the Renewal IHA as this measure was included in the issued IHA but not restated in the Proposed Renewal IHA. The ENGOs also asserted that NMFS must acknowledge that vessel strikes can result in take by Level A harassment, and that NMFS must explicitly analyze the potential for such take resulting from vessel collisions in its take analysis for Vineyard Wind.

Response: While NMFS acknowledges that vessel strikes can result in Level A harassment or mortality, we have analyzed the potential for ship strike resulting from Vineyard Wind's activity and have determined that based on the nature of the activity and the required mitigation measures specific to ship strike avoidance included in the Renewal IHA, potential for ship strike is so low as to be discountable. These mitigation measures, which were included in the initial IHA, summarized in the Proposed Renewal IHA, and are likewise required in the Renewal IHA, include: a requirement that all vessel operators reduce vessel speed to 10 kn (18.5 km/hour) or less when any large whale, any mother/calf pairs, pods, or large assemblages of non-delphinoid cetaceans are observed within 100 m of an underway vessel; a requirement that all survey vessels maintain a separation distance of 500-m or greater from any sighted North Atlantic right whale while underway; a requirement that, if underway, vessels must steer a course away from

any sighted North Atlantic right whale at 10 kn or less until the 500-m minimum separation distance has been established; a requirement that, if a North Atlantic right whale is sighted in a vessel's path, or within 500 m of an underway vessel, the underway vessel must reduce speed and shift the engine to neutral; a requirement that all vessels underway must maintain a minimum separation distance of 100 m from any sighted non-delphinoid species; and a requirement that all vessels underway must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel). For clarification, the requirement that all vessel operators comply with 10 kn (18.5 km/hour) or less speed restrictions in any SMA or DMA while underway is also still a required mitigation measure and applicable to the Renewal IHA. We have determined that the ship strike avoidance measures in the Renewal IHA are sufficient to ensure the least practicable adverse impact on species or stocks and their habitat. We note that no documented vessel strikes have occurred for any marine site characterization surveys which were issued IHAs from NMFS during the survey activities themselves, or while transiting to and from project sites.

Comment 19: Oceana commented that the IHA must include requirements for all vessels to maintain a separation distance of at least 500 m from North Atlantic right whales at all times.

Response: NMFS agrees with Oceana and has stipulated in both the **Federal Register** notice of proposed Renewal IHA (85 FR 30435, June 08, 2021) and this Renewal IHA that survey vessels must maintain a separation distance of 500 m or greater from any sighted North Atlantic right whale. Further, if a whale is observed but cannot be confirmed as a species other than a right whale, NMFS requires that the vessel operator must assume that it is a right whale and maintain a minimum separation distance of 500 m.

Comment 20: Oceana recommended that the Renewal IHA should require all vessels to be equipped with and using Class A Automatic Identification System (AIS) devices at all times while on the water in order to support oversight and enforcement of the conditions of the HRG survey. Oceana suggested this requirement should apply to all vessels, regardless of size, associated with the project.

Response: NMFS is generally supportive of the idea that vessels involved with survey activities be equipped with and using Class A Automatic Identification System (devices) at all times while on the water. Indeed, there is a precedent for NMFS requiring such a stipulation for geophysical surveys in the Atlantic Ocean (38 FR 63268, December 7, 2018); however, these activities were much louder than the marine site characterization surveys to be carried out by Vineyard Wind and resulted in the potential for both Level A and Level B harassment take. Given the small isopleths and small numbers of take authorized by this IHA, NMFS does not agree that the benefits of requiring AIS on all vessels associated with the survey activities outweighs and warrants the cost and impracticability of this requirement to Vineyard Wind.

Comment 21: Oceana asserted that the IHA must include requirements to specify and require all vessels associated with the project, at all phases of development, follow the vessel plan and rules including vessels owned by the developer, contractors, employees, and others regardless of ownership, operator, contract. They noted that exceptions and exemptions will create enforcement uncertainty and incentives to evade regulations through reclassification and redesignation. They recommended that NMFS can simplify this by requiring all vessels to abide by the same requirements, regardless of size, ownership, function, contract or other specifics. They also recommended that the IHA must also include a condition to specify that developers are explicitly liable for behavior of all employees, contractors, subcontractors, consultants, and associated vessels and machinery.

Response: NMFS agrees with Oceana and required these measures in the initial IHA and the Renewal IHA. The IHA requires that a copy of the IHA must be in the possession of Vineyard Wind, the vessel operators, the lead PSO, and any other relevant designees of Vineyard Wind operating under the authority of this IHA. The IHA also states that Vineyard Wind must ensure that the vessel operators and other relevant vessel personnel are briefed on all responsibilities, communication procedures, marine mammal monitoring protocols, operational procedures, and IHA requirements prior to the start of survey activity, and when relevant new personnel join the survey operations. Further the IHA includes a measure that states that the IHA may be modified, suspended or withdrawn if the holder fails to abide by the conditions prescribed in the IHA, or if NMFS determines the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.

Comment 22: Oceana stated that the IHA must include a requirement for all phases of the Vineyard Wind site characterization to subscribe to the highest level of transparency, including frequent reporting to Federal agencies, requirements to report all visual and acoustic detections of North Atlantic right whales and any dead, injured, or entangled marine mammals to the Fisheries Service or the Coast Guard as soon as possible and no later than the end of the Protected Species Observer shift. To foster stakeholder relationships and allow public engagement and oversight of the permitting, the IHA should require all reports and data to be accessible on a publicly available website.

Response: NMFS agrees with the need for reporting and indeed, the MMPA calls for IHAs to incorporate reporting requirements. As included in the initial IHA and the proposed Renewal IHA, the Renewal IHA includes requirements for reporting that supports Oceana's recommendations. Vineyard Wind is required to submit a monitoring report to NMFS within 90 days after completion of survey activities that fully documents

the methods and monitoring protocols, summarizes the data recorded during both visual and passive acoustic monitoring, estimates the number of marine mammals that may have been taken during survey activities, and describes, assesses and compares the effectiveness of monitoring and mitigation measures. PSO datasheets or raw sightings data must also be provided with the draft and final monitoring report. Further the Renewal IHA stipulates that if a North Atlantic right whale is observed at any time by any project vessels, during surveys or during vessel transit, Vineyard Wind must immediately report sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System and to the U.S. Coast Guard, and that any discoveries of injured or dead marine mammals be reported by Vineyard Wind to the Office of Protected Resources, NMFS, and to the New England/Mid-Atlantic Regional Stranding Coordinator as soon as feasible. All reports and associated data submitted to NMFS are included on the project website for public inspection.

Comment 23: The ENGOs objected to NMFS' process to consider extending any one-year IHA with a truncated 15-day comment period as contrary to the MMPA.

Response: NMFS' IHA renewal process meets all statutory requirements. In prior responses to comments about Renewal IHAs (e.g., 84 FR 52464; October 02, 2019 and 85 FR 53342, August 28, 2020), NMFS has explained how the renewal process, as implemented, is consistent with the statutory requirements contained in section 101(a)(5)(D) of the MMPA, provides additional efficiencies beyond the use of abbreviated notices, and, further, promotes NMFS' goals of improving conservation of marine mammals and increasing efficiency in the MMPA compliance process. Therefore, we intend to continue implementing the renewal process.

All IHAs issued, whether an initial IHA or a Renewal IHA, are valid for a period of not more than one year, and the public has at least 30 days to comment on all proposed IHAs, with a cumulative total of 45 days for Renewal IHAs. As noted above, the **Request**

for Public Comments section made clear that the agency was seeking comment on both the proposed IHA and the potential issuance of a renewal for this project. Because any Renewal IHA (as explained in the **Request for Public Comments** section) is limited to another year of identical or nearly identical activities in the same location (as described in the **Description of the Specified Activities and Anticipated Impacts** section) or the same activities that were not completed within the one-year period of the initial IHA, reviewers have the information needed to effectively comment on both the immediate proposed IHA and a possible one-year Renewal IHA, should the IHA holder choose to request one.

While there are additional documents submitted with a renewal request, for a qualifying Renewal IHA these will be limited to, as they were in this case, documentation that NMFS will make available and use to verify that the activities are identical to those in the initial IHA, are nearly identical such that the changes would have either no effect on impacts to marine mammals or decrease those impacts, or are a subset of activities already analyzed and authorized but not completed under the initial IHA. NMFS also confirms, as it did for Vineyard Wind's renewal request, among other things, that the activities will occur in the same location; involve the same species and stocks; provide for continuation of the same mitigation, monitoring, and reporting requirements; and that no new information has been received that would alter the prior analysis. The renewal request also contains a preliminary monitoring report, but that is to verify that effects from the activities do not indicate impacts of a scale or nature not previously analyzed. The additional 15-day public comment period provided the public an opportunity to review these few documents, provide any additional pertinent information and comment on whether they think the criteria for a Renewal IHA have been met. Between the initial 30-day comment period on these same activities and the additional 15 days, the total comment period for a Renewal IHA is 45 days.

In addition to the Renewal IHA process being consistent with all requirements under section 101(a)(5)(D), it is also consistent with Congress' intent for issuance of IHAs to the extent reflected in statements in the legislative history of the MMPA. Through the provision for Renewal IHAs in the regulations, description of the process and express invitation to comment on specific potential Renewal IHAs in the **Request for Public Comments** section of each proposed IHA, the description of the process on NMFS' website, further elaboration on the process through responses to comments such as these, posting of substantive documents on the agency's website, and provision of 30 or 45 days for public review and comment on all proposed IHAs and Renewal IHAs respectively, NMFS has ensured that the public "is invited and encouraged to participate fully in the agency decision-making process."

Determinations

The survey activities to be carried out by Vineyard Wind are identical to (and a subset of) those analyzed in the initial IHA, as are the method of taking and the effects of the action. The mitigation measures and monitoring and reporting requirements as described above are also identical to the initial IHA. The planned number of days of activity will be reduced given the completion of a portion of the originally planned work. Therefore, the amount of take authorized is equal to or less than that authorized in the initial IHA. The potential effect of Vineyard Winds' activities remains limited to Level B harassment in the form of behavioral disturbance. In analyzing the effects of the activities in the initial IHA, NMFS determined that Vineyard Wind's activities would have a negligible impact on the affected species or stocks and that the authorized take numbers of each species or stock were small relative to the relevant stocks (*e.g.*, less than one-third of the abundance of all stocks).

NMFS has concluded that there is no new information suggesting that our analysis or findings should change from those reached for the initial IHA. This includes

consideration of the estimated abundances of four stocks (North Atlantic right whales, humpback whales, fin whales, and minke whales) decreasing and the estimated abundances of one stock (common dolphins) increasing (Hayes *et al*. 2020, Pace 2021) since the issuance of the initial IHA. This also includes consideration of Vineyard Wind's preliminary monitoring report, increased density estimates for North Atlantic right whales based on updated model outputs from Roberts *et al*. (2020) as described above in the *Estimated Take* section, the information supporting the assessment that the Project Area includes areas that are important year-round habitats for North Atlantic right whales, and the recent designation of Gulf of Maine humpback whales as a strategic stock. Based on the information and analysis contained here and in the referenced documents, NMFS has determined the following: (1) the required mitigation measures will effect the least practicable impact on marine mammal species or stocks and their habitat; (2) the authorized takes will have a negligible impact on the affected marine mammal species or stocks; (3) the authorized takes represent small numbers of marine mammals relative to the affected stock abundances; (4) Vineyard Wind's activities will not have an unmitigable adverse impact on taking for subsistence purposes as no relevant subsistence uses of marine mammals are implicated by this action, and; (5) appropriate monitoring and reporting requirements are included.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our authorized action with respect to environmental consequences on the human environment.

This action is consistent with categories of activities identified in CE B4 of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human

environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the Renewal IHA qualifies to be categorically excluded from further NEPA review.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq*.) requires that each Federal agency insure 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 issuance of IHAs, NMFS consults internally, in this case with the NMFS Greater Atlantic Regional Fisheries Office (GARFO), whenever we authorize take for endangered or threatened species.

The NMFS Office of Protected Resources is authorizing the incidental take of four species of marine mammals which are listed under the ESA: The North Atlantic right, fin, sei and sperm whale. On April 10, 2013, NMFS Greater Atlantic Regional Fisheries Office (GAFRO) issued a programmatic Biological Opinion for BOEM Lease and Site Assessment Rhode Island, Massachusetts, New York, and New Jersey Wind Energy Areas determining site assessment surveys were not likely to jeopardize the continued existence of North Atlantic these listed species. NMFS requested initiation of consultation under Section 7 of the ESA with NMFS GARFO on February 12, 2020, for issuance of the initial IHA to Vineyard Wind. On April 16, 2020 GARFO issued an amended incidental take statement associated with the 2013 Biological Opinion and determined that the issuance of the initial IHA was not likely to jeopardize the continued existence of North Atlantic right, fin, sei and sperm whales. On May 12, 2021, NMFS GARFO determined that their initial consultation remains valid for the Renewal IHA and that the Renewal IHA provides no new information about the effects of the action, nor

does it change the extent of effects of the action, or any other basis to require reinitiation of the opinion.

Renewal

NMFS has issued a Renewal IHA to Vineyard Wind for the take of marine mammals incidental to conducting marine site characterization survey activities off the coast of Massachusetts in the areas of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0501 and OCS-A 0522) and along potential submarine cable routes to landfall locations in Massachusetts, Rhode Island, Connecticut, and New York. This Renewal IHA is effective from July 15, 2021 through June 20, 2022.

Dated: July 15, 2021.

Catherine Marzin,

Acting Director, Office of Protected Resources,

National Marine Fisheries Service.

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