



MARINE MAMMAL COMMISSION

12 March 2020

Ms. Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the applications submitted by Vineyard Wind, LLC (Vineyard Wind) and Atlantic Shores Offshore Wind, LLC (Atlantic Shores) under section 101(a)(5)(D) of the Marine Mammal Protection Act (the MMPA). Both companies are seeking authorization to take small numbers of marine mammals by harassment incidental to high-resolution geophysical (HRG) surveys off the northeast United States. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 12 February 2020 notices (85 Fed. Reg. 7952 for Vineyard Wind and 85 Fed. Reg. 7926 for Atlantic Shores) requesting comments on its proposals to issue the authorizations, subject to certain conditions.

Background

Vineyard Wind is proposing to conduct HRG surveys to characterize lease areas¹ off Massachusetts and along potential submarine export cable route corridors to landfall locations in Massachusetts, Rhode Island, Connecticut, and New York, in support of an offshore wind development project. The surveys would occur year-round during day and night and would involve the use of up to eight vessels, with no more than three operating concurrently, resulting in an estimated maximum of 736 vessel days. Sound-generating equipment proposed for use includes sub-bottom profilers (SBPs)², ultra-short baseline and global acoustic positioning systems, multibeam echosounders, and side-scan sonar.

Atlantic Shores is proposing to conduct HRG surveys to characterize a lease area³ off New York and New Jersey and along potential submarine export cable route corridors to a landfall location in New York or New Jersey. The surveys would occur year-round during day and night for a maximum of 350 vessel days. Surveys would involve the use of up to three vessels, with only one vessel operating in both the lease area and the export cable route corridor at a time. Sound-

¹ Bureau of Ocean Energy Management (BOEM) lease numbers OCS-A 0501 and OCS-A 0522.

² Including parametric, chirp, sparker, and boomer types.

³ BOEM lease number OCS-A 0499.

generating equipment proposed for use includes sub-bottom profilers (SBPs)², single-beam echosounders, and side-scan sonar.

NMFS preliminarily has determined that the proposed activities could cause Level B harassment of small numbers of 14 and 15⁴ marine mammal species by Vineyard Wind and Atlantic Shores, respectively. It also anticipates that any impact on the affected species and stocks would be negligible. NMFS does not anticipate any take of marine mammals by death or serious injury and believes that the potential for disturbance will be at the least practicable level because of the proposed mitigation measures. The proposed mitigation, monitoring, and reporting measures include—

- for Vineyard Wind, conducting survey activities in the Cape Cod Bay and Off Race Point Seasonal Management Areas (SMAs) only during the months of August and September⁵;
- using protected species observers to monitor the exclusion zones⁶ and Level B harassment zones for 30 minutes before, during, and for 30 minutes after the HRG surveys;
- using standard pre-clearance, ramp-up, delay, and shut-down procedures;
- using shut-down procedures if a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized number of takes is met, approaches or is observed within the Level B harassment zone;
- using passive acoustic monitoring (PAM) and night-vision equipment to detect marine mammals during night-time operations and/or low visibility⁷;
- using standard vessel strike avoidance procedures and monitoring⁸ the NMFS North Atlantic right whale reporting systems during all survey activities;
- reporting injured and dead marine mammals to the Office of Protected Resources and the New England/Mid-Atlantic Stranding Coordinator⁹; and
- submitting a draft and final report to NMFS.

Appropriateness of Level A and B harassment zones

Background—The Commission has commented on the inappropriateness of Level A and B harassment zones associated with multiple HRG surveys in the past (e.g., see its [18 October 2019](#)¹⁰,

⁴ The Summary of Request section of the Atlantic Shores' *Federal Register* notice indicated 12 marine mammal species could be taken by Level B harassment (85 Fed. Reg. 7927); while Table 7 of the *Federal Register* notice and Table 1 of the draft authorization indicated that 15 marine mammal species could be taken.

⁵ There are no seasonal restrictions for Atlantic Shores.

⁶ 500 m for North Atlantic right whales and 100 m for all other marine mammals.

⁷ The requirement for Vineyard and Atlantic Shores to use night-vision equipment was included in the draft authorizations but was not specified in the preamble of either *Federal Register* notice.

⁸ NMFS included this standard measure in the preamble for Atlantic Shores but not Vineyard. However, it was included in the draft authorizations for both projects.

⁹ Neither the preamble nor the draft authorization for Vineyard would require the vessel operator to cease operations if project activities result in an injury or mortality of a marine mammal. The preamble for Atlantic Shores would require the vessel operator to cease operations only in the event that project activities result in an injury (Level A harassment).

¹⁰ For Skipjack Offshore Energy, LLC's (Skipjack) proposed HRG survey activities.

[23 August 2019](#)¹¹, [6 July 2018](#)¹², and [13 June 2018](#)¹³ letters). NMFS had allowed action proponents to use incorrect Level A harassment thresholds¹⁴, which resulted in overestimated Level A harassment zones. NMFS also had prohibited action proponents from using in-situ measurements of Level B harassment zones and required them to use Level B harassment zones calculated from source levels obtained either from manufacturer specifications or from Crocker and Fratantonio (2016), which resulted in overestimated Level B harassment zones. In only one instance were the operating frequency (or frequencies) and beamwidth considered in those calculations. Despite the Commission's previous comments and recommendations, the Level A and B harassment zones have been overestimated again but to a greater degree than in previous authorizations. Some of the previous inaccuracies were included in Vineyard Wind's and Atlantic Shores' applications, as well as additional issues that are summarized herein.

Parameters for estimating Level A and B harassment zones—JASCO Applied Sciences (USA) Inc. (JASCO) estimated the Level A and B harassment zones for both Vineyard Wind and Atlantic Shores (see Appendices A and B, respectively, in both applications). JASCO incorporated the operating frequency (or frequencies) and the beamwidth of each source in its estimation of Level A and B harassment zones¹⁵. To account for seawater absorption, JASCO calculated the relevant absorption coefficient based on the absorption equation from Ainslie (2010)¹⁶ and the operating frequency¹⁷ of each source for Level A and B harassment in both applications. The Commission concurs with that approach.

JASCO included the basic equation¹⁸ that accounts for the source beamwidth for estimating Level B harassment zones (see equation B-4 in Appendix B of Vineyard's application¹⁹), but did not include the equation for estimating the Level A harassment zones (Appendix A in both applications). The Commission can only assume that JASCO used the same equation to estimate both types of harassment zones for both applications. JASCO also indicated that it considered the beamwidth²⁰ for sources with beamwidths less than or equal to 90°²¹ when it estimated both Level A and B harassment zones for Vineyard Wind and Atlantic Shores (see Appendices A and B in both applications). For narrow-beam sources (beamwidths $\leq 35^\circ$), JASCO estimated out-of-beam source levels using various equations and assumptions (see Appendices A and B in both applications). For intermediate-beam sources (beamwidths from 36–90°), JASCO interpolated the correction factor used to estimate out-of-beam source levels based on the results from narrow-beam and broad-beam sources (see Figures A-1 and B-1 in Vineyard Wind's application and Figure 1 in Appendices A and B of Atlantic Shores' application). JASCO indicated that it calculated *separate impact ranges* using the

¹¹ For Ørsted Wind Power LLC's (Ørsted) proposed HRG survey activities.

¹² For Dominion Energy Virginia's (Dominion) proposed HRG activities.

¹³ For Ørsted/Bay State Wind's proposed HRG survey activities.

¹⁴ The impulsive rather than non-impulsive thresholds were used to estimate the Level A harassment zones for parametric and chirp SBPs, which are non-impulsive sources.

¹⁵ And assumed 20logR propagation loss.

¹⁶ Discarding the boric acid term.

¹⁷ Or the lowest operating frequency, if a range of frequencies is emitted by the source.

¹⁸ Additional beamwidth-related equations and parameters were included in Appendix A and B of both applications. Ainslie (2010) was referenced for only some of those but appear to be the basis for those that were unreferenced.

¹⁹ That equation was omitted from Appendix B of Atlantic Shores' application as well.

²⁰ Or the largest beamwidth, if a range of beamwidths can be emitted by the source.

²¹ For sources with beamwidths greater than 90°, the source was considered omnidirectional and termed broad-beam.

in-beam source level at the angle corresponding to the -3 -dB half-width²² and the out-of-beam source level (e.g., Table 5 on 85 Fed. Reg. 7968 for Vineyard Wind²³) in the horizontal direction and then selected the higher of the two *sound levels* for assessing the impact distance (Appendix A of Vineyard Wind's application)²⁴.

The Commission has multiple concerns with JASCO's approach for incorporating beamwidths. First, JASCO did not specify why it did not use beam patterns and resulting gain provided in Crocker and Fratantonio (2016) for some of the sources. Second, JASCO did not justify its assumption that a beamwidth greater than 90° would be considered omnidirectional, or 180° , for what it termed broad-beam sources. The Commission cannot locate where Ainslie (2010) included such an assumption. For Atlantic Shores, the Level B harassment zone would be 54 m rather than 71 m for the Teledyne Benthos Chirp III if JASCO had incorporated the actual beamwidth of 100° rather than assuming it was 180° . Similarly, the Level B harassment zone would be 42 m rather than 56 m for the Applied Acoustics S-Boom if JASCO had incorporated the actual beamwidth of 98° . In addition, JASCO appears to have characterized the beamwidth of the Applied Acoustics AA251 boomer incorrectly as 180° rather than 75° based on Crocker and Fratantonio (2016, Table 4). Third, for narrow-beam and intermediate-beam sources, JASCO did not justify why the unshaded circular transducer equation from Ainslie (2010) did not apply to sources with beamwidth greater than 35° , as Ainslie (2010) did not include that limitation. Specifically, Crocker and Fratantonio (2016) noted that the first side lobe is 18 dB less than the main lobe (i.e., the -3 -dB half-width) for the Applied Acoustics AA251 boomer. Using JASCO's interpolated correction factor, the out-of-beam source level would be only about -5 dB (Figure A-1 and B-1 in Vineyard Wind's application), which is 13 dB greater than the actual value reported by Crocker and Fratantonio (2016). This point reinforces the fact that JASCO should have incorporated actual values for the beam patterns and resulting gain rather than relying on theoretical assumptions. The Commission recommends that NMFS (1) incorporate the actual beamwidth of 75° rather than 180° for the Applied Acoustics AA251 boomer for Vineyard Wind and the actual beamwidth of 100° rather than 180° for the Teledyne Benthos Chirp III and 98° rather than 180° for the Applied Acoustics S-Boom for Atlantic Shores and (2) re-estimate the Level A and B harassment zones accordingly.

Fourth, JASCO did not provide any of the correction factors for out-of-beam source levels in Atlantic Shores' application. Thus, it is difficult to ascertain what out-of-beam source levels were used by JASCO. However, based on estimating the correction factors from Figure 1 in Appendix B in Atlantic Shores' application²⁵ and using the various source levels, beamwidths, and operating frequencies provided in that Appendix, it appears that the out-of-beam source level approach²⁶ was

²² At the reported beamwidth(s).

²³ Neither Atlantic Shores' application nor NMFS's *Federal Register* notice provided the out-of-beam source levels.

²⁴ In Appendix B of Vineyard's application and Appendices A and B of Atlantic Shores' application, JASCO indicated that separate *sound levels* were calculated using the in-beam source level at the angle corresponding to the -3 -dB half-width and the out-of-beam source level in the horizontal direction. The higher of the two *sound levels* was then selected for assessing impact distance.

²⁵ Which is the same as Figure 1 in Appendix A for estimating Level A harassment zones.

²⁶ The Commission further notes that the Level B harassment zones for the Edgetech 2000-DSS and Edgetech 216 should be 2 m rather than 4 m and the Applied Acoustics S-Boom triple plate should be 91 m rather than 97 m for Atlantic Shores. Those zones were estimated incorrectly based on the parameters stipulated in Table 2 of the *Federal Register* notice and Tables 2 and 4 in Appendix B of Atlantic Shores' application.

only used for the Innomar SES-2000 Medium-100 parametric SBP when estimating Level B harassment zones²⁷. This was the case for Vineyard Wind as well, although not explicitly stated. The Commission is not convinced that JASCO's method for estimating out-of-beam source levels is appropriate for a parametric SBP, as it did not yield accurate results for the Applied Acoustics AA251 boomer²⁸. More importantly, parametric SBPs (and sonars) are intended to generate narrow, nearly side lobe-free beams of lower frequency sound²⁹ through the interaction of high-frequency sound—they are not meant to have prominent side lobes. Although the beam pattern of the Innomar SES-2000 Medium-100 parametric SBP has yet to be measured, sound levels have been measured in the field. Subacoustech (2018) estimated that the sound levels were 133 dB re 1 μ Pa at 100 m, which obviously was an out-of-beam sound level based on the 2° beamwidth of the source. Subacoustech (2018) further specified that the Level B harassment zone was less than 10 m and the source level was estimated to be 187 dB re 1 μ Pa at 1 m. That source level is much less than JASCO's estimated out-of-beam source level of 204.7 dB re 1 μ Pa at 1 m³⁰. Based on the in-situ out-of-beam source level and $20\log R$ ³¹, the Level B harassment zone would be 21 m rather than 116 m, as specified for both Vineyard Wind and Atlantic Shores. NMFS would not accept in-situ measurements for previous authorizations, because they potentially were not collected within the main beam of the source. That should not be an issue for the Innomar SES-2000 Medium-100 parametric SBP given that JASCO's intent was to use the out-of-beam source level to inform the extents of the harassment zones. Given that parametric SBPs are meant to generate narrow, nearly side lobe-free beams of sound, it is not surprising that the lateral leakage of sound or 'out-of-beam' source levels are so much less³² than the reported in-beam source levels. If NMFS intends to use out-of-beam source levels, the Commission recommends that NMFS use the out-of-beam source level of 187 dB re 1 μ Pa at 1 m from Subacoustech (2018) for the Innomar SES-2000 Medium-100 parametric SBP and re-estimate the Level A and B harassment zones accordingly for both Vineyard Wind and Atlantic Shores. Otherwise, NMFS should use the in-beam source level and beamwidth to revise the harassment zones³³ accordingly for the parametric SBP.

Fifth and building on the fourth point, JASCO mischaracterized how it determined whether to use in-beam or out-of-beam source levels in all of the Appendices for both applications. JASCO in fact calculated *separate impact ranges* using the in-beam source level at the angle corresponding to the

²⁷ It is impossible to ascertain whether out-of-beam source levels were used to estimate the Level A harassment zones in Appendix A of either application. This issue is discussed in a subsequent section herein.

²⁸ As noted previously herein.

²⁹ i.e., difference-frequency signals.

³⁰ This is not surprising given that the out-of-beam source level was based on the manufacturer's specified source level of 241 dB re 1 μ Pa at 1 m—manufacturer's specified source levels are widely known to be overestimates.

³¹ And an operating frequency of 85 kHz.

³² Qu et al. (2018) found that the source level at the operating frequency was 38 dB greater than at the difference frequencies, while Browning et al. (2009) indicated that the sound levels at the operating frequency can be 40 to more than 50 dB greater than at the difference frequencies. Qu et al. (2018) also determined that the beamwidths at the difference frequencies were slightly greater than at the operating frequency (4° at 10 kHz compared to 2.6° at 300 kHz). Browning et al. (2009) described the same trend with the beamwidths at the difference frequencies ranging up to 7.2° at 2 kHz, while the beamwidth was only 1.8° at the operating frequency of approximately 100 kHz. In either case, assuming a beamwidth of 180° would be conservative.

³³ Considering the Commission's fifth point, the Level B harassment zone would be less than 4 m for Vineyard and less than 1 m for Atlantic Shores. The operating frequency (and difference frequencies) has no effect on the extent of the Level B harassment zone in waters as shallow as where Vineyard (200 m) and Atlantic Shores (40 m) would be operating.

–3-dB half-width and the out-of-beam source level in the horizontal direction and then selected the greater of the two *ranges*. The beamwidth equation incorporates slant range³⁴ and beamwidth, not actual *source levels*. Sixth, the beamwidth equation that JASCO used did not account for water depth. The beamwidth equation is based on a simple application of the Pythagorean theorem. As such, the full extent of the slant range cannot be achieved when it is clipped by the seafloor. For example, for Atlantic Shores, the slant range of the Kongsberg EA 400 single-beam echosounder is 644 m³⁵ with a presumed water depth of 620 m, which would result in a Level B harassment zone of 172 m based on a beamwidth of 31°. However, the maximum water depth in the Atlantic Shores’ project area is only 40 m (85 Fed. Reg. 7928 and Figure 1-1 in the application), which would result in a Level B harassment zone of only 11 m. Similar results are evident for boomers as well. NMFS had considered water depth in previously-issued authorizations involving HRG surveys (e.g., 84 Fed. Reg. 52482). Although it is not clear why NMFS did not use the same approach for Vineyard Wind and Atlantic Shores, it is clear that the harassment zones for single-beam echosounders and shallow-penetration SBPs³⁶ have been vastly overestimated based on this particular issue alone and based on previous authorizations (e.g., 84 Fed. Reg. 52480 and 66167) for the same or similar equipment. The Commission recommends that NMFS incorporate water depth when considering the beamwidth for all sources, including in this instance single-beam echosounders, shallow-penetration SBPs, and boomers, for both Vineyard Wind and Atlantic Shores. The Level A and B harassment zones for Vineyard Wind and Atlantic Shores should be revised accordingly.

In-situ measurements and standardized methods—In addition to the various beamwidth issues, the Commission again notes that in-situ measurements of the same sources conducted off the east coast of the United States during previous HRG surveys indicate that the Level B harassment zones are in fact quite small, 27 m or less (e.g., Gardline 2016, Subacoustech 2018), for the remaining sources—sparkers and boomers. In response to the Commission’s [23 August 2019 letter](#) recommending that NMFS use in-situ measurements, NMFS indicated that discrepancies between in-situ measurements and data from Crocker and Fratantonio (2016) likely were due to the beam pattern of many HRG sources and the fact that measurements likely were taken outside the main lobe of the source (84 Fed. Reg. 52465). The Commission agrees that that issue may exist for some sources, but it does not exist for sparkers³⁷ and is unlikely an issue for boomers³⁸ that produce the largest Level B harassment zones for Vineyard Wind and Atlantic Shores.

A previously perceived issue with in-situ measurements from a sparker may have resulted from the hydrophone clipping the data in the nearfield, which was discussed by Gardline (2016). Gardline used a high sound pressure level hydrophone to capture the nearfield measurements³⁹. Figure D.1 in Gardline (2016)⁴⁰ shows that the measured sound levels at approximately 140 m were

³⁴ Which is based on the source level and operating frequency, or absorption coefficient.

³⁵ Based on an in-beam source level of 222.8 dB re 1 μ Pa at 1 m and the lowest operating frequency of 38 kHz.

³⁶ Which are denoted as shallow SBPs in Table 1 of the *Federal Register* notice for Vineyard and denoted as just SBPs in Table 2 in the *Federal Register* notice for Atlantic Shores.

³⁷ With beamwidths of 180°.

³⁸ With beamwidths ranging from 80 to 180° (Table 1 on 85 Fed. Reg. 7954 for Vineyard and Table 2 on 85 Fed. Reg. 7928 for Atlantic Shores).

³⁹ Which were used to inform the waveform and to validate the near-field digital signal processing scaling implemented by Gardline (2016; see section 2.3.2).

⁴⁰ Figure 3.3 in Gardline (2016) and Figure 1 in Gardline (2017) show similar results as well.

approximately 140 dB re 1 μ Pa or less and were not affected by hydrophone clipping. The Level B harassment zones were estimated to be 27 m or less for the Geo Spark with 600 and 800 tips; Vineyard Wind plans to use only the 400 tip⁴¹. Furthermore, Subacoustech (2018) measured a mean sound level of 141.2 dB re 1 μ Pa and maximum sound level of 150.7 dB re 1 μ Pa at 60.5 m for the Applied Acoustics Dura-Spark, which resulted in an estimated Level B harassment zone of 19 m. That is less than JASCO's estimate of 372 m for Atlantic Shores. Similar results are evident for the Applied Acoustics S-boom triple plate in which the Level B harassment zones were estimated to be less than 20 m (Marine Acoustics Inc. (MAI) 2018, RPS 2018) rather than up to 97 m as estimated for Atlantic Shores. The Commission is not convinced that any of the HRG sources that Vineyard Wind and Atlantic Shores plans to use would result in actual Level B harassment zones greater than 50 m, let alone 100 m.

As the Commission has stated previously, many of the issues⁴² could be minimized with proper methodological requirements and signal processing standards. To ensure that in-situ data are collected and analyzed appropriately, the Commission again recommends that NMFS and BOEM expedite efforts to develop and finalize, in the next six months, methodological and signal processing standards for HRG sources. Those standards should be used by action proponents that conduct HRG surveys and that either choose to conduct in-situ measurements to inform an authorization application or are required to conduct measurements to fulfill a lease condition set forth by BOEM. NMFS did not provide a detailed response regarding the Commission's previous recommendation⁴³ as required under section 202(d) of the MMPA. It merely stated that it would evaluate the need for and appropriate development of guidance and tools (84 Fed. Reg. 66159). The Commission explicitly requests a detailed response to this recommendation if NMFS does not follow or adopt it.

Other assumptions regarding Level A and B harassment zones—NMFS allowed both Vineyard Wind and Atlantic Shores to use the wrong Level A harassment thresholds for single-beam echosounders, shallow-penetration SBPs⁴⁴, and underwater positioning pingers as it has for previous authorizations. In this instance, JASCO indicated that it assumed that sources that operate with a repetition rate greater than 10 Hz were considered non-impulsive and sources with a repetition rate equal to or less than 10 Hz were considered impulsive sources (see Appendix A in both applications). For Vineyard Wind's authorization, NMFS did state that it does not agree with JASCO's source classification, that the use of a 10-Hz repetition rate criterion would be precedent setting, and that the criterion needed further evaluation (85 Fed. Reg. 7968). However, for Atlantic Shores' authorization, NMFS merely stated that it did not necessarily agree with that step in JASCO's modeling assessment (85 Fed. Reg. 7941–2). In both instances, NMFS acknowledged that the Level A harassment zones were more conservative based on using the impulsive rather than non-impulsive thresholds and chose to use zones that were based on the wrong thresholds anyway.

⁴¹ Which should result in smaller zones.

⁴² Including contractors having difficulty obtaining adequate on-axis measurements of the signals and georeferencing the source relative to the hydrophone, the hydrophone clipping the sound, and signal processing issues.

⁴³ Or multiple other recommendations that are discussed in subsequent sections herein.

⁴⁴ Except the Innomar SES-2000 Medium-100 parametric SBP. Vineyard incorrectly noted in the Federal Register notice that the impulsive threshold was used for all HRG sources, which was an error. The non-impulsive threshold was used for the parametric SBP, see Table A-4 in Vineyard's application.

NMFS (2018) specifically defined impulsive sources as those that produce sounds that are typically transient, brief (less than 1 second), broadband, and consist of high peak sound pressure with rapid rise time and rapid decay (American National Standards Institute (ANSI) 1986, National Institute for Occupational Safety and Health (NIOSH) 1998, ANSI 2005). Single-beam echosounders, shallow-penetration SBPs, and underwater positioning pingers emit (1) regularly-timed pulses that are not transient, (2) narrow-band not broad-band sound, and (3) sound that lacks a high peak pressure and both a rapid rise time and decay. NMFS (2018) included no criteria associated with repetition rate in its definitions of impulsive and non-impulsive sources. JASCO again has not justified its assumption that sources with a repetition rate greater than 10 Hz are the only sources for which the non-impulsive thresholds should be used. This approach would apply not only to HRG sources that have long been considered non-impulsive sources⁴⁵, but it also would apply to sources such as low-, mid-, and high-frequency active sonar used by the Navy.

Furthermore, use of the impulsive thresholds⁴⁶ for non-impulsive sources results in completely unrealistic Level A harassment zones. JASCO estimated that the Level A harassment zones for the single-beam echosounders were 213–220 m⁴⁷, while the Level B harassment zones were estimated to be 172–173 m. Those trends are not possible for moving sound sources and could only result from use of the wrong threshold.

Although the impulsive threshold is more conservative than the non-impulsive threshold, allowing action proponents to choose arbitrarily which thresholds to use undermines the intent of the acoustic thresholds, does not represent best available science, and is in fact precedent-setting. Therefore, the Commission again recommends that NMFS (1) prohibit Vineyard Wind, Atlantic Shores, and other action proponents from using the impulsive Level A harassment thresholds for estimating the extents of the Level A harassment zones for non-impulsive sources (i.e., echosounders, shallow-penetration SBPs, pingers, etc.) and (2) require action proponents to use the correct Level A harassment thresholds in all future applications.

In addition, JASCO's method for estimating the Level A harassment zones is not transparent and cannot be replicated for either action proponent. For Vineyard Wind, JASCO indicated that it added a 0.5-dB correction 'to the energy source level because the 90 percent energy pulse duration usually used to evaluate the source level contains only 90 percent of the pulse energy' (see step 1 in section A.1 of Vineyard Wind's application). JASCO indicated that the 0.5-dB correction ensures that all of the energy in the pulse is included. This step was omitted from Appendix A in the Atlantic Shores' application—it is unclear if JASCO implemented the same step for Atlantic Shores. It is unclear why this step is necessary if JASCO is using source levels based on sound exposure levels (SELs; see step 3 in section A.1 of Vineyard Wind's application). It also is unclear why a standard 0.5-dB correction would be used for source levels that range from 178 to 241 dB re 1 μ Pa at 1 m. It seems that the correction factor would be relative to the underlying source level. More concerning is JASCO's closest point of approach (CPA) method for estimating the extents of the Level A harassment zones (see steps 2 to 5 in section A.1 of Vineyard Wind's application, which are the same as in section 1 of Appendix A in Atlantic Shores' application). It is unclear how the SELs for each survey line were combined, or why they were combined, how the

⁴⁵ Including multibeam echosounders.

⁴⁶ Which are 13 to 18 dB greater than the non-impulsive thresholds depending on the functional hearing group.

⁴⁷ These have previously been less than 10 m or non-existent.

curves of weighted SELs were produced, and what assumption(s) determined the CPA for each functional hearing group.

Moreover, JASCO indicated that both in-beam and out-of-beam source levels were included in step 3 of its modeling approach for Atlantic Shores. Appendix A in Vineyard Wind's application did not include the same statement—it is unclear if JASCO implemented the same approach for Vineyard Wind. Given that out-of-beam considerations only seemed to apply to the Innomar SES-2000 Medium-100 parametric SBP for the Level B harassment zones, presumably it was used to estimate the Level A harassment zones for Vineyard Wind as well. JASCO estimated the Level A harassment zone to be 60 m for high-frequency (HF) cetaceans for both Vineyard Wind and Atlantic Shores and noted in Appendix A of Vineyard Wind's application that it was similar to the 75-m zone estimated using Bellhop for Bay State Wind's authorization in 2018. Bay State Wind had originally estimated the Level A harassment zone using the impulsive rather than non-impulsive threshold, which resulted in the 75-m Level A harassment zone for HF cetaceans. However, NMFS adjusted the 75-m zone to less than 5 m for HF cetaceans in the final authorization (Table 3; 83 Fed. Reg. 36550). It is unclear how JASCO's Level A harassment zone for HF cetaceans that used a reduced out-of-beam source level is an order of magnitude greater than Bay State Wind's Level A harassment zone that used a source level more than 38 dB higher.

NMFS's currently-available user spreadsheet does not incorporate either the operating frequency or beamwidth of the source, which led JASCO to develop its own method. NMFS is revising an updated version of the user spreadsheet that incorporates those parameters. The spreadsheet provides users the ability to estimate Level B harassment zones as well. The Commission previously stated that such a tool is essential for action proponents proposing to conduct HRG surveys. As such, the Commission recommends that NMFS (1) re-estimate all of the Level A and B harassment zones for both Vineyard Wind and Atlantic Shores using its user spreadsheet that incorporates the operating frequency and beamwidth and (2) provide the spreadsheet to all action proponents that conduct HRG surveys, post it on NMFS's website, and require all action proponents to use it for all future HRG-related authorizations. A similar recommendation was included in previous Commission letters, the last of which elicited the same response that NMFS would the need for and appropriate development of guidance and tools (84 Fed. Reg. 66159). It is apparent that the tools are necessary not only for action proponents but for NMFS analysts to ensure that the estimated Level A and B harassment zones are correct, which has clearly been an issue for both Vineyard Wind and Atlantic Shores.

Finally on the topic of harassment zones, JASCO estimated a second set of Level B harassment zones. JASCO indicated that it adjusted the source levels based on the pulse duration and a 100-msec integration time as recommended by the Consortium for Ocean Leadership (COL; 2018). COL (2018) provided recommendations for common approaches and methods for collecting passive acoustic data and processing ocean ambient sound data. It is unclear how those objectives relate to the integration time of the marine mammal ear. COL (2018) noted as a best practice measure for measuring ambient sound to use an averaging time of 100 msec for comparability across studies, but provided no reference for the 100-msec integration time. NMFS did not mention this matter at all in the *Federal Register* notice for Atlantic Shores, but did discuss it in the notice for Vineyard Wind.

NMFS stated that it is known that integration time varies and depends on a multitude of factors, including frequency, repetition rate, bandwidth, and species (85 Fed. Reg. 7968). NMFS also indicated that it agrees that integration time is an important factor to consider but that using a single number to encompass all sound sources and species seems like a potential oversimplification (85 Fed. Reg. 7968). Therefore, NMFS ultimately used pulse duration only to estimate Level B harassment zones (85 Fed. Reg. 7968). The Commission agrees that integration time is important but also agrees that a single 100-msec value is not reflective of all species and sound sources. Integration time varies from 0.5 msec to greater than 5,000 msec for various marine mammal species and from 14 to more than 3,600 msec for a single species alone (see Table 3 in Erbe et al. (2016)). As such, the Commission supports NMFS in prohibiting Vineyard Wind and Atlantic Shores from incorporating integration time.

However, NMFS incorrectly reiterated JASCO's assertion that *pulse duration* was used to estimate the Level B harassment zones in the *Federal Register* notice for Vineyard Wind (85 Fed. Reg. 7968; see Appendix B in Atlantic Shore's application as well). JASCO indicated that it used *both the pulse duration* and 100-msec averaged source levels to compute *two* different Level B harassment zones for each source (see Appendix B in both applications). In fact, JASCO did no such thing. JASCO appears to have used the pulse duration⁴⁸, the presumed 100-msec integration time, *and* the repetition rate⁴⁹ to yield an adjusted sound pressure level root-mean-square (SPL_{rms}) source level and resulting Level B harassment zone. Although JASCO did not include the equation or assumptions used to derive the adjusted source levels in Appendix B of either application, this appears to be the case⁵⁰. Contrary to Appendix B and the *Federal Register* notice, JASCO did not account for the pulse duration (or repetition rate) in its estimation of the Level B harassment zones when just the SPL_{rms}-based source level was used. The Commission recommends that NMFS (1) continue to prohibit action proponents, including Vineyard Wind and Atlantic Shores, from using a 100-msec integration time to adjust the SPL_{rms}-based source levels when estimating the Level B harassment zones, (2) ensure that the *Federal Register* notice for the final authorizations for Vineyard Wind and Atlantic Shores do not incorrectly state that pulse duration was considered in the estimation of the Level B harassment zones, and (3) require action proponents to omit any related discussions regarding integration time from all future applications to avoid unnecessary confusion and errors in future *Federal Register* notices.

⁴⁸ $10\log(T)$ is added to a reported source level, where T is the pulse duration in seconds when normalizing the source level to 1 sec. If JASCO assumed that the source level is normalized to 100 msec, the equation presumably would be $10\log(T/100)$, where T is the pulse duration in msec. Since many of the pulse durations for HRG sources are less than 100 msec, the correction will be a negative number (e.g., for a 10-msec pulse, the correction is -10 dB).

⁴⁹ To account for the number of pulses that are emitted, $10\log(N)$ is added to the reported source level as well, where N is the number of pulses in 100 msec (e.g., for 4 pulses, 6 dB is added).

⁵⁰ Had JASCO only used the pulse duration of 2 msec and presumed 100-msec integration time, the adjusted source level for the Innomar SES-2000 Medium-100 parametric SBP would have been 224 rather than 230 dB re 1 μ Pa at 1 m.

HRG surveys in general

Many of the HRG sources⁵¹ are considered *de minimus* sources⁵² by NMFS in other incidental harassment authorizations and rulemakings. Thus, it is unclear why those sources are considered in HRG-related authorizations. The Commission again recommends that NMFS evaluate the impacts of sound sources consistently across all action proponents and deem sources *de minimus* in a consistent manner for all proposed incidental harassment authorizations and rulemakings. This has the potential to reduce burdens on both action proponents and NMFS.

In addition, Vineyard Wind and Atlantic Shores are required by BOEM to implement shut-down procedures at 500 m for North Atlantic right whales and 200 m for other cetaceans and pinnipeds, based on conditions stipulated in Addendum C of their leases. For the proposed authorizations, NMFS would require Vineyard Wind and Atlantic Shores to implement a 500-m exclusion zone for North Atlantic right whales and a 100-m exclusion zone for all other marine mammals. Those zones are greater than in-situ measured and/or re-estimated Level B harassment zones based on the recommendations included herein. As NMFS seeks to streamline and improve the efficiency of its authorization processes, the Commission again recommends that NMFS consider whether, in such situations involving HRG surveys⁵³, incidental harassment authorizations are necessary given the small size of the Level B harassment zones, the proposed shut-down requirements, and the added protection afforded by the lease-stipulated exclusion zones. Specifically, NMFS should evaluate whether taking needs to be authorized for those sources that *are not* considered *de minimus*⁵¹, including sparkers and boomers, *and* for which implementation of the various mitigation measures should be sufficient to avoid Level B harassment takes. NMFS did not specifically address the Commission's recommendation in its most recent [18 October 2019](#) letter regarding this matter. The Commission expects that NMFS will do so for this letter.

Proposed takes by Level B harassment

The estimated Level B harassment takes for North Atlantic right whales in Table 7 of the *Federal Register* notice for Vineyard Wind were 30.32. However, NMFS proposed to authorize only 10 Level B harassment takes of right whales. No explanation was provided in the preamble regarding why the take estimate was reduced by two-thirds, when the reduction in takes of right whales for Atlantic Shores was 50 percent, with the explanation that it was to account for mitigation. The Commission recommends that NMFS provide justification for reducing the number of Level B harassment takes for North Atlantic right whales for Vineyard Wind or include up to 30 Level B harassment takes in the final authorization.

The proposed Level B harassment take of sei whales should have been rounded up to four whales in Table 7 of the *Federal Register* notice for Vineyard Wind, consistent with Table 1 of the

⁵¹ NMFS mischaracterized the Commission's previous recommendations involving HRG surveys that *all* HRG sources should be considered *de minimus* (84 Fed. Reg. 66159). Some are considered *de minimus*, while others are not. However, the impacts of those sources would be mitigated based on the implementation of shut-down requirements and lease-stipulated exclusion zones.

⁵² Defined as sources that have low source levels, narrow beams, downward-directed transmission, short pulse lengths, frequencies outside known marine mammal hearing ranges, or some combination of those factors (84 Fed. Reg. 37244).

⁵³ And until it revises its 160-dB re 1 μ Pa threshold for intermittent, non-impulsive sources.

draft incidental harassment authorization. In addition, the proposed Level B harassment take of sei whales should have been increased to at least two animals in Table 7 of the *Federal Register* notice for Atlantic Shores and Table 1 of the final authorization to account for mean group size⁵⁴. The Commission recommends that NMFS authorize up to (1) four Level B harassment takes of sei whales for Vineyard Wind consistent with Table 1 in the draft authorization and (2) two Level B harassment takes of sei whales for Atlantic Shores based on group size.

Similarly, the proposed Level B harassment takes of Risso's dolphins should have been increased to 30 in Table 7 of the *Federal Register* notice for Atlantic Shores and Table 1 of the final authorization to account for mean group size, as proposed in Table 7-2 of Atlantic Shores' application, and as was done for Vineyard Wind's and previous authorizations for HRG surveys in the Atlantic Outer Continental Shelf region (see e.g., 84 Fed. Reg. 66156 and 84 Fed. Reg. 52464). The Commission recommends that NMFS authorize up to 30 Level B harassment takes of Risso's dolphins for Atlantic Shores based on group size.

Mitigation, monitoring, and reporting measures

As noted herein, the proposed authorizations appear to represent a change in NMFS's longstanding requirement that action proponents report an unauthorized injury or mortality to NMFS *and* cease operations until they have consulted with NMFS. That requirement has been in each authorization issued to date by NMFS for HRG surveys in the Atlantic Outer Continental Shelf region (e.g., see 84 Fed. Reg. 66173 and the associated incidental harassment authorization⁵⁵). Neither the preamble nor the draft authorization for Vineyard Wind would require the vessel operator to cease operations if project activities result in an unauthorized injury or mortality of a marine mammal. The preamble for Atlantic Shores would require the vessel operator to cease operations only in the event that project activities result in an injury by Level A harassment, but not in the event of an unauthorized project-related mortality, such as one caused by a vessel strike⁵⁶. It is critical that project activities that result in an unauthorized injury or mortality of a marine mammal be halted immediately and reported to NMFS so that the circumstances of the taking can be reviewed by NMFS and additional measures can be taken as necessary to minimize the likelihood of additional prohibited takes. The Commission recommends that NMFS require Vineyard Wind and Atlantic Shores to report as soon as possible *and* cease project activities immediately in the event of an unauthorized injury or mortality of a marine mammal from a vessel strike until NMFS's Office of Protected Resources and the New England/Mid-Atlantic Regional Stranding Coordinator determine whether additional measures are necessary to minimize the potential for additional unauthorized takes.

Proposed one-year authorization renewals

NMFS has indicated that it may issue a one-year incidental harassment authorization renewal for this and other future authorizations if various criteria are met and after an expedited public comment period of 15 days. The Commission and various other entities (e.g., 84 Fed. Reg. 31035

⁵⁴ Consistent with the approach for other species; <https://www.fisheries.noaa.gov/species/sei-whale>.

⁵⁵ <https://www.fisheries.noaa.gov/webdam/download/99623135>.

⁵⁶ Additionally, the requirement to cease operations in the event of an unauthorized take by Level A harassment was not included in the draft authorization for Atlantic Shores.

and 52466) have asserted that the renewal process is inconsistent with the statutory requirements under section 101(a)(5)(D) of the MMPA. As such, the Commission recommends that NMFS refrain from issuing renewals for any authorization and instead use its abbreviated *Federal Register* notice process. That process is similarly expeditious and fulfills NMFS's intent to maximize efficiencies.

Over the past few years, NMFS has told the Commission that a renewal would be issued as a one-time opportunity, after which time a new authorization application would be required. NMFS also has included such verbiage in its response to comments regarding renewals. Specifically, NMFS indicated that it had modified the language for future proposed incidental harassment authorizations to clarify that all authorizations, including renewal authorizations, are valid for no more than one year and that the agency will consider *only one renewal* for a project at this time (e.g., 84 Fed Reg. 36892 from 30 July 2019). However, NMFS has yet to stipulate that the agency will consider *only one renewal* or that a renewal is a *one-time opportunity* in any *Federal Register* notice requesting comments on the possibility of a renewal, on its webpage detailing the renewal process⁵⁷, or in any draft or final authorization that includes a term and condition for a renewal (including section 8 of Vineyard Wind's and Atlantic Shores' draft authorizations).

In response to the Commission's 29 November 2019 letter recommending that NMFS stipulate those specifics in the relevant documents and on its webpage, NMFS indicated that, in the 'summary' portion of its notices, it requests comments on a possible *one-year renewal* that could be issued under certain circumstances and if all requirements are met (84 Fed. Reg. 68131). However, neither the notices nor the webpage or final authorizations state that *one-year renewals* are *one-time opportunities*. NMFS also indicated that, for notices involving proposed renewals, it has not included an option of an additional renewal (84 Fed. Reg. 68131). Absent specifics regarding one-year renewals being a one-time opportunity in the *Federal Register* notices, on NMFS's webpage, and more importantly as a term and condition in its draft and final authorizations, NMFS appears to knowingly allow that door to remain open. If NMFS chooses to continue proposing to issue renewals, the Commission recommends that it (1) stipulate that a renewal is a *one-time opportunity* (a) in all *Federal Register* notices requesting comments on the possibility of a renewal, (b) on its webpage detailing the renewal process, and (c) in all draft and final authorizations that include a term and condition for a renewal and, (2) if NMFS refuses to stipulate a renewal being a one-time opportunity, explain why it will not do so in its *Federal Register* notices, on its webpage, and in all draft and final authorizations.

Ongoing inadequacy of responses to Commission recommendations

The Commission has indicated, both herein and in its formal letters⁵⁸, that NMFS has not been responding adequately to its recommendations. The MMPA requires that, if an agency does not implement the Commission's recommendations, the agency explain why it has not done so. Specifically, section 202(d) of the MMPA requires that NMFS respond within 120 days after receipt of Commission recommendations and if any recommendations are not followed or adopted, a

⁵⁷ <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-harassment-authorization-renewals>

⁵⁸ See its [21 January 2020 letter](#) on the National Science Foundation's (NSF) geophysical survey in the Amundsen Sea as just one example.

detailed explanation of the reasons why those recommendations were not followed or adopted must be provided. As noted herein for previous HRG surveys, either NMFS did not provide a detailed response explaining why it did not follow the Commission's recommendations⁵⁹ or the responses were sorely insufficient⁶⁰. For other recent authorizations⁶¹, NMFS omitted Commission recommendations outright⁶², did not respond to certain recommendations⁶³, indicated it would consult with the Commission on recommendations that it had not addressed therein or in previous responses⁶⁴, and incorrectly specified and responded to the Commission's recommendations⁶⁵. This

⁵⁹ As was the case for the Commission's recommendation regarding whether an authorization was necessary given the size of the Level B harassment zones and the required mitigation and lease-stipulated measures. NMFS combined that recommendation with two other recommendations regarding implementing a 50-m Level B harassment zone based on in-situ measurements and consistently deeming sound sources *de minimus* for all proposed authorizations and rulemakings (84 Fed. Reg. 66159). It addressed the latter two recommendations in its response but not the recommendation regarding whether an authorization was necessary given the size of the Level B harassment zones and implementation of the required measures.

⁶⁰ As was the case for the Commission's recommendations regarding expediting efforts to develop and finalize methodological and signal processing standards for HRG sources and providing a simple spreadsheet that includes beamwidth and source frequency to action proponents when it provides them with its guidance regarding sound propagation modeling for HRG sources. NMFS merely stated that it appreciated the Commission's interest in those issues and that it would evaluate the need for and appropriate development of guidance and tools (84 Fed. Reg. 66159).

⁶¹ e.g., NMFS's response to Commission comments on NSF's survey in the Amundsen Sea (85 Fed. Reg. 5619) and Lamont-Doherty Earth Observatory's (LDEO) survey in the Gulf of Alaska (84 Fed. Reg. 27246).

⁶² As was the case for the Commission's recommendation regarding more thoroughly evaluating applications and *Federal Register* notices prior to submitting them to the *Federal Register* for public comment, based on errors, inconsistencies, and omissions in applications and *Federal Register* notices involving LDEP and other NSF-funded and -affiliated surveys (84 Fed. Reg. 27246).

⁶³ As was the case for the Commission's recommendation regarding ensuring that NSF keeps a running tally of total Level B harassment takes based on both observed and extrapolated takes. NMFS again combined that recommendation with the recommendation to extrapolate Level B harassment takes to the unobserved portions of the Level B harassment zone and noted that the *reporting requirement* to extrapolate takes was included in the authorization (85 Fed. Reg. 5622). NMFS did not, however, include the words 'running tally' in its response or otherwise address the Commission's recommendation on this matter.

⁶⁴ As was the case for the Commission's recommendations regarding (1) explaining why NMFS believes that sound channels with downward refraction, as well as seafloor reflections, are not likely to occur during the geophysical survey, (2) specifying the degree to which both of those parameters would affect the estimation (or underestimation) of Level B harassment zones in deep and intermediate-depth water, (3) explaining why NMFS believes that NSF's model and other 'modeling' approaches provide more accurate, realistic, and appropriate Level A and B harassment zones than approaches favored by the Commission, particularly for deep and intermediate-depth water, and (4) explaining, if NSF's model and other 'modeling' approaches are considered best available science, why other action proponents that conduct seismic surveys are not implementing similar methods, particularly given their simplicity. NMFS yet again combined those recommendations with other modeling-specific recommendations, indicated that it had previously responded to the Commission's comments on NSF's modeling approach (e.g., 84 Fed. Reg. 60059, 84 Fed. Reg. 54849, 84 Fed. Reg. 35073) when in fact it has never responded to those specific recommendations as noted in the Commission's 18 October 2019 and previous letters, and stated that it would engage separately with the Commission about the issues (85 Fed. Reg. 5622). It has been over a month and NMFS has yet to contact the Commission about the matter. Regardless, NMFS is statutorily obligated to provide the Commission with detailed responses, in addition to any informal engagement on the matter.

⁶⁵ As was the case for the Commission's recommendation regarding (1) stipulating that a renewal is a *one-time opportunity* (a) in all *Federal Register* notices requesting comments on the possibility of a renewal, (b) on its webpage detailing the renewal process, and (c) in all draft and final authorizations that include a term and condition for a renewal and, (2) if NMFS refuses to stipulate a renewal being a one-time opportunity, justifying why it will not do so in its *Federal Register* notices, on its webpage, and in all draft and final authorizations. NMFS responded that it disagreed with the Commission's recommendations, as stated in its previous comment responses relating to other actions, which it

lack of direct responses leads one to conclude that NMFS has inadequate justification to support its decisions not to follow the Commission's recommendations. Regardless, responses must be provided. The Commission recommends that, *for all authorizations and rulemakings*, NMFS provide separate, detailed explanations for not following or adopting any Commission recommendation, as required by section 202(d) of the MMPA.

Please contact me if you have questions regarding the Commission's recommendations.

Sincerely,



Peter O. Thomas, Ph.D.,
Executive Director

cc: Stan Labak, BOEM

References

- Ainslie. 2010. Principles of sonar performance modeling. Springer-Verlag, Berlin, Germany. 727 pages.
- ANSI. 1986. Methods of measurement for impulse noise (ANSI S12.7-1986). Acoustical Society of America, New York, New York.
- ANSI. 2005. Measurement of sound pressure levels in air (ANSI S1.13-2005). Acoustical Society of America, New York, New York.
- Browning, D.G., M.B. Moffett, and W.L. Konrad. 2009. Parametric acoustic array development at the US Navy's New London, Connecticut laboratory. Proceedings of Meetings on Acoustics (6): 045002. <https://doi.org/10.1121/1.3179751>.
- COL. 2018. Report of the workshop on recommendations related to passive ocean acoustic data standards. COL, Washington, District of Columbia. 11 pages.
- Crocker, S.E., and F.D. Fratantonio. 2016. Characteristics of sounds emitted during high-resolution marine geophysical surveys. Naval Undersea Warfare Center Division, Newport, Rhode Island. 265 pages.
- Erbe, C., C. Reichmuth, K. Cunningham, K. Lucke, and R. Dooling. 2016. Communication masking in marine mammals: A review and research strategy. Marine Pollution Bulletin 103:15–38.
- Gardline 2016. Survey report for Bay State wind: Field verification and vessel signature report. Gardline, Norfolk, England. 62 pages.
- Gardline 2017. Technical memo in support of Bay State Wind field verification report. Gardline, Norfolk, England. 3 pages.

incorporated by reference (e.g., 84 Fed. Reg. 52464; October 02, 2019). The Commission did not include any such recommendations until its [29 November 2019 letter](#). As such, a response from nearly two months prior is completely irrelevant.

- MAI. 2018. Final report for Oceaneering International, Inc. Sound source verification: Supporting Deepwater Wind's Skipjack Wind Farm Project off Maryland and Delaware. MAI 1046, TN 18-026, Arlington, Virginia. 21 pages.
- NIOSH. 1998. Criteria for a recommended standard: Occupational noise exposure. Department of Health and Human Services, Cincinnati, Ohio.
- NMFS. 2018. 2018 Revision to: Technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing: Underwater acoustic thresholds for onset of permanent and temporary threshold shifts. Office of Protected Resources, Silver Spring, Maryland. 178 pages.
- Qu, K., B. Zou, J. Chen, Y. Guo, and R. Wang. 2018. Experimental study of a broadband parametric acoustic array for sub-bottom profiling in shallow water. Shock and Vibration: 3619257. <https://doi.org/10.1155/2018/3619257>.
- RPS. 2018. HRG survey equipment acoustic field verification report. RPS, Houston, Texas. 11 pages.
- Subacoustech. 2018. Sound source verification for high-resolution geophysical survey equipment: Fugro Enterprise. Report No. P236R0202, Subacoustech Environmental, Southampton, United Kingdom. 23 pages.

By Electronic Mail

March 13, 2020

Ms. Jolie Harrison
Chief, Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910
ITP.Pauline@noaa.gov

RE: Proposed Incidental Harassment Authorization for Marine Site Characterization Surveys Offshore of Massachusetts, and Along Offshore Export Cable Corridors to Landfall Locations in Massachusetts, Rhode Island, Connecticut, and New York as requested by Vineyard Wind, LLC.

Dear Ms. Harrison,

On behalf of the Conservation Law Foundation, Natural Resources Defense Council, National Wildlife Federation and our millions of members, we respectfully submit our comments on the National Marine Fisheries Service's ("NMFS") proposal to issue an incidental harassment authorization ("Proposed IHA") to Vineyard Wind, LLC ("Vineyard Wind") for marine site characterization surveys off the coast of Massachusetts in two Commercial Leases 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 offshore export cable route corridors ("OECCs") to landfall locations in Massachusetts, Rhode Island, Connecticut, and New York (collectively, the "Project Area"). *See* 85 Fed. Reg. 7952 (Feb. 12, 2020).

We recognize the significant contribution that the offshore wind projects associated with these surveys could make in providing clean energy for New England and New York. However, it is our view that offshore wind energy can and must be advanced in an environmentally responsible manner to ensure that it meets ambitious climate and clean energy goals in the region, while also safeguarding vulnerable ocean habitat and wildlife. In addition to rich wind resources, the waters in the Project Area support a diversity of marine life including at least 14 species of marine mammals, including five large and seven small cetaceans, and two pinnipeds.¹ Of the five large whale species, three (fin, sei, and North Atlantic right whale) are listed as endangered under the U.S. Endangered Species Act ("ESA") and as depleted and strategic stocks under the Marine Mammal Protection Act ("MMPA").

¹ 85 Fed. Reg. at 7955, Table 2.

The following comments are intended to support Vineyard Wind in achieving its goal to advance offshore wind in a sustainable manner, while also expressing our concerns regarding NMFS' negligible impact analysis and the avoidance, minimization, mitigation, and monitoring requirements necessary to ensure adequate mitigation measures in the Project Area.

Because it is our view that NMFS' analysis likely underestimates the impact of these activities on the reproductive success and survivorship of North Atlantic right whales, we strongly recommend that the Final IHA require the following measures:

- A seasonal restriction on site assessment and characterization activities in the Project Area with the potential to injure or harass North Atlantic right whales (*i.e.*, source level >180 dB re 1 μ Pa (SPL) at 1 meter at frequencies between 7 and 35 kHz)² between November 1, 2020 and May 14, 2021;
- A prohibition on the commencement of geophysical surveys at night or during times of poor visibility; with ramp up, during daylight hours only, to maximize the probability that North Atlantic right whales are detected and confirmed clear of the exclusion zone;
- A requirement to monitor an exclusion zone for North Atlantic right whales of *at least* 500 meters ("m"), and ideally 1,000 m, around each vessel conducting activities with noise levels that could result in injury or harassment to this species. Such monitoring should consist of a combination of visual monitoring by Protected Species Observers ("PSOs") and passive acoustic monitoring at all times that survey work is underway;
- A requirement that four PSOs adhere to a two-on/two-off shift schedule to ensure no individual PSO is responsible for monitoring more than 180° of the exclusion zone at any one time;
- A requirement to use a combination of visual monitoring by PSOs and passive acoustic monitoring at all times that survey work is underway at noise levels that could injure or harm North Atlantic right whales; and
- A requirement that all project vessels (regardless of size) either transiting to/from or operating within the Lease Areas observe a 10 knot speed restriction during times, at minimum, when mother-calf pairs, pregnant females, surface active groups, or aggregations of three or more whales are confirmed or, based on multi-year sightings data, expected to be in the area. A compulsory 10 knot vessel speed restriction should also be required of all project vessels (not just survey vessels) within a Dynamic Management Area ("DMA") established by NMFS. To the extent that any project vessel of any size may exceed a speed of 10 knots, it should only be permitted if multiple monitoring measures are in place, including aerial surveys or a combination of vessel-based visual observers and passive acoustic monitoring.

² The best available science on other low- to mid-frequency sources (*e.g.*, Nowacek et al. 2004, Kastelein et al. 2012, 2015) indicates that Level B takes will occur with near certainty at exposure levels well below the 160 dB threshold that NMFS applies to behavioral impacts.

As we have in the past, we object to NMFS' proposed process to consider extending any one-year IHA with a truncated 15-day comment period as contrary to the MMPA.

We note that in a few instances Vineyard Wind has adopted more conservative measures than NMFS otherwise requires – specifically, in regards to the use of passive acoustic monitoring during night time operations and a commitment to employ a minimum of two (2) NMFS-approved PSOs on all survey vessels during HRG equipment operation. We strongly recommend that NMFS incorporate these measures as well as our other recommendations into the Final IHA to ensure greater protections for North Atlantic right whales.

I. BACKGROUND

A. *The Marine Mammal Protection Act*

Congress enacted the MMPA because “certain species and population stocks of marine mammals are, or may be, in danger of extinction or depletion as a result of man’s activities.”³ The statute seeks to ensure that species and population stocks are not “permitted to diminish beyond the point at which they cease to be a significant functioning element of the ecosystem of which they are a part,” and do not “diminish below their optimum sustainable population.”⁴ Congress intended for NMFS to act conservatively in the face of uncertainty when authorizing activities harmful to marine species.⁵ This careful approach to management was necessary because of the vulnerable status of many species and because it is difficult to measure the impacts of human activities on marine mammals in the wild.⁶

At the heart of the MMPA is its “take” prohibition, which establishes a moratorium on the capture, harassing, hunting, or killing of marine mammals, and generally prohibits any person or vessel subject to the jurisdiction of the United States from taking a marine mammal on the high seas or in waters or on land under the jurisdiction of the United States.⁷ Harassment is any act that “has the potential to injure a marine mammal or marine mammal stock in the wild” or to “disturb a marine mammal . . . by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.”⁸

NMFS may grant exceptions to the take prohibition. As relevant here, the agency may authorize, for not more than a one-year period, the incidental, but not intentional, “taking by harassment of small numbers of marine mammals of a species or population stock” if the agency determines

³ 16 U.S.C. § 1361(1).

⁴ *Id.* § 1361(2); *see also Conservation Council for Hawaii v. Nat’l Marine Fisheries Serv.*, 97 F. Supp. 3d 1210, 1216 (D. Haw. 2016).

⁵ H.R. Rep. No. 92-707 (Dec. 4, 1971), as reprinted in 1972 U.S.C.C.A.N. 4144, 4148.

⁶ 16 U.S.C. § 1361(1), (3).

⁷ 16 U.S.C. §§ 1362(13), 1371(a).

⁸ *Id.* § 1362(18)(A).

that such take would have only “a negligible impact on such species or stock.”⁹ The agency must prescribe permissible methods of taking to ensure that the activity has “the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.”¹⁰ NMFS must also establish monitoring and reporting requirements.¹¹ No later than 45 days after receiving an application for an IHA, NMFS must publish a proposed authorization and open a 30-day comment period.¹²

B. The status of Atlantic large whales

As the agency is aware, the conservation status of the North Atlantic right whale is dire and getting worse. Although the species has been listed as endangered under the ESA for decades, recent scientific analysis confirms that the population has been declining since 2010 due to entanglements in commercial fishing gear and ship strikes. Almost 30 animals are known to have been killed since 2017 and the population is now estimated at approximately 400 individuals.¹³ Moreover, females are more negatively affected than males by the lethal and sublethal effects of human activity, surviving to only 30-40 years of age with an extended inter-calf interval of approximately 10 years.¹⁴ In the wake of an alarming number of detected deaths of North Atlantic right whales in 2017, NMFS declared an Unusual Mortality Event (“UME”),¹⁵ which devotes additional federal resources to determining and—if possible—mitigating the source of excessive mortality. This designation is still in effect.

Moreover, ongoing UMEs exist for other whales in the Project Area. There have been UMEs for the Atlantic population of minke whales since January 2017 and humpback whales since January 2016.¹⁶ Alarmingly, 63 minke whales have stranded between Maine and South Carolina from January 2017 to July 2019.¹⁷ Elevated numbers of humpback whales have also been found stranded along the Atlantic Coast since January 2016 and, in a little over three years, 100 humpback whale mortalities have been recorded (data through July 26, 2019), with strandings

⁹ *Id.* § 1371(a)(5)(D)(i).

¹⁰ *Id.* § 1371(a)(5)(D)(ii)(I).

¹¹ *Id.* § 1371(a)(5)(D)(iii).

¹² *Id.* § 1371(a)(5)(D)(iii).

¹³ NOAA Fisheries, “North Atlantic right whale,” available at: <https://www.fisheries.noaa.gov/species/north-atlantic-right-whale>.

¹⁴ Corkeron, P., Hamilton, P., Bannister, J., Best, P., Charlton, C., Groch, K.R., Findlay, K., Rowntree, V., Vermeulen, E., and Pace, R.M., “The recovery of North Atlantic right whales, *Eubalaena glacialis*, has been constrained by human-caused mortality.” *Royal Society Open Science*, vol 5, art. 180892 (2018).

¹⁵ NOAA-NMFS, “North Atlantic right whale Unusual Mortality Event.” Available at: <http://www.nmfs.noaa.gov/pr/health/mmume/2017northatlanticrightwhaleume.html>.

¹⁶ NOAA-NMFS, “2016-2018 Humpback whale Unusual Mortality Event along the Atlantic Coast.” Available at: <https://www.fisheries.noaa.gov/national/marine-life-distress/2016-2019-humpback-whale-unusual-mortality-event-along-atlantic-coast>; NOAA-NMFS, “2017-2018 Minke whale Unusual Mortality Event along the Atlantic Coast.” Available at: <https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2018-minke-whale-unusual-mortality-event-along-atlantic-coast>.

¹⁷ *Id.*

occurring in every state along the East Coast.¹⁸ The declaration of these three large whale UMEs by the agency in the past few years, for which anthropogenic impacts are a significant cause of mortality, demonstrates an increasing risk to whales from human activities along the U.S. East Coast.

Given the highly endangered status of the North Atlantic right whale, NMFS is obligated by both the ESA and the MMPA to protect this species from the additional harmful impacts of human activities. The agency is also obligated by the MMPA to consider the full range of potential impacts on all marine mammal species, including minke and humpback whales, that are known to utilize the survey area and surrounding areas before issuing an IHA with appropriate avoidance, minimization, mitigation, and monitoring measures. NMFS must use the best available scientific information on marine mammal presence and density, as required by law.¹⁹ Considering the elevated threat to federally protected large whale species and populations in the Atlantic, and emerging evidence of dynamic shifts in the distribution of large whale habitat, NMFS must ensure that any potential stressors posed by the proposed surveys are mitigated to effectuate the least practicable impact on affected species and stocks.²⁰

C. North Atlantic right whale seasonality and distribution off the coasts of Rhode Island, Massachusetts, Connecticut, and New York

Since 2010, North Atlantic right whale distribution and habitat use has shifted in response to climate change-driven shifts in prey availability.²¹ Best available scientific information, including aerial surveys,²² acoustic detections,²³ stranding data,²⁴ a series of DMAs declared by NMFS pursuant to ship strike rule,²⁵ and prey data,²⁶ indicate that North Atlantic right whales

¹⁸ NOAA-NMFS, “2016-2018 Humpback whale Unusual Mortality Event along the Atlantic Coast,” *supra* note 16.

¹⁹ 16 U.S.C. §§ 1362(19), §§ 1362(27).

²⁰ *Id.* § 1371(a)(5)(D)(ii)(I).

²¹ Record, N., Runge, J., Pendleton, D., Balch, W., Davies, K., Pershing, A., Johnson, C., Stamieszkin, K., Ji, R., Feng, Z. and Kraus, S., “Rapid Climate-Driven Circulation Changes Threaten Conservation of Endangered North Atlantic Right Whales,” *Oceanography*, vol. 32, pp. 162-169 (2019).

²² Kraus, S.D., Leiter, S., Stone, K., Wikgren, B., Mayo, C., Hughes, P., Kenney, R.D., Clark, C.W., Rice, A.N., Estabrok, B., and Tielens, J., “Northeast large pelagic survey collaborative aerial and acoustic surveys for large whales and sea turtles. Final Report,” OCS Study, BOEM 2016-054, pp. 118 (2016); Leiter, S.M., Stone, K.M., Thompson, J.L., Accardo, C.M., Wikgren, B.C., Zani, M.A., Cole, T.V.N., Kenney, R.D., Mayo, C.A., and Kraus, S.D., “North Atlantic right whale *Eubalaena glacialis* occurrence in offshore wind energy areas near Massachusetts and Rhode Island, USA,” *Endangered Species Research*, vol. 34, pp. 45-59 (2017); Quintana, E., “Monthly report No. 3: May 2017,” Report prepared for the Massachusetts Clean Energy Center by the New England Aquarium, pp. 26 (May 15, 2017).

²³ Kraus, S.D., *et al.*, *id.*; Davis, G.E., Baumgartner, M.F., Bonnell, J.M., Bell, J., Berchick, C., Bort Thornton, J., Brault, S., Buchanan, G., Charif, R.A., Cholewiak, D., *et al.*, “Long-term passive acoustic recordings track the changing distribution of North Atlantic right whales (*Eubalaena glacialis*) from 2004 to 2014,” *Scientific Reports*, vol. 7, p. 13460 (2017).

²⁴ Asaro, M.J., “Update on US Right Whale Mortalities in 2017,” NOAA Fisheries, November 30, 2017. Available at: https://www.greateratlantic.fisheries.noaa.gov/protected/whaletrp/trt/meetings/2017%20Nov/asaro_usstrandings_nov2017.pdf.

²⁵ NOAA Fisheries Interactive DMA Analyses: <https://www.nefsc.noaa.gov/rcb/interactive-monthly-dma-analyses/>.

²⁶ Pendleton, D.E., Pershing, A., Brown, M.W., Mayo, C.A., Kanney, R.D., Record, N.R., and Cole, T.V.N., “Regional-scale mean copepod concentration indicates relative abundance of North Atlantic right whales,” *Marine Ecology Progress Series*, vol.

now heavily rely on the waters within, and in the vicinity of, the Project Area.²⁷ In January 2019, an aggregation representing a quarter of the population—100 whales—was seen in this area²⁸ engaged in both foraging and social activities, demonstrating that it is clearly more than just a migratory corridor.²⁹ As the Proposed IHA acknowledges, large seasonally consistent aggregations of North Atlantic right whales occur within or close to the Lease Areas from at least December through May, leading the area to be considered by scientists as a North Atlantic right whale “hotspot.”³⁰ North Atlantic right whales were observed feeding in the vicinity of the Lease Areas during the first half of May for the first time in 2017,³¹ potentially indicative of a broader temporal shift in distribution resulting in right whales at greater densities off Rhode Island and Massachusetts later in the year, through May and into the summer months.³² Pregnant females are known to travel through the area in November and December and females of reproductive age are also present in the area in February and March, with April appearing particularly important for mothers and calves.³³ Several scientific data sources demonstrate that right whales use these waters year-round.³⁴

North Atlantic right whales select foraging areas based on a relatively high threshold of copepod density of approximately 3850-4000 organisms per cubic meter.³⁵ Notably, foraging areas with suitable prey density are limited relative to the overall distribution of North Atlantic right whales,³⁶ meaning that unrestricted and undisturbed access to suitable areas, when they exist, is extremely important for this species to maintain its energy budget. Scientific information on North Atlantic right whale functional ecology also shows that the species employs a “high-drag” foraging strategy that enables them to selectively target high-density prey patches, but is energetically expensive.³⁷ Thus, if access to prey is limited in any way, the ability of the whale to offset its energy expenditure during foraging is jeopardized. In fact, the authors of the study

378, pp. 211-225 (2009); NOAA Northeast Fisheries Science Center, “Ecology of the Northeast US Continental Shelf – Zooplankton.” Available at: <https://www.nefsc.noaa.gov/ecosys/ecosystem-ecology/zooplankton.html>.

²⁷ Although there are challenges in the use of opportunistic sightings data (no area systematically surveyed, effort not corrected for, and potential for counting an individual whale more than once), they are a proxy for habitat used by North Atlantic right whales, as validated by NMFS’ management actions based on these data, including the implementation of DMAs.

²⁸ See

https://www.greateratlantic.fisheries.noaa.gov/mediacenter/2019/01/28_voluntary_vessel_speed_restriction_zone_in_effect_south_of_nantucket_to_protect_right_whales.html.

²⁹ 85 Fed. Reg. at 7956.

³⁰ 85 Fed. Reg. at 7956; see also Leiter, S.M., *et al.* 2017; Kraus *et al.* 2016.

³¹ Quintana, E.

³² Davis, G.E., *et al.*

³³ Dr. C. Good *pers. comm.* to Dr. F. Kershaw and M. Jasny, Oct. 24, 2017.

³⁴ Kraus, S.D., *et al.*; Davis, G.E., *et al.*; NOAA Fisheries Interactive DMA Analyses.

³⁵ Personal communication from Dr. Charles “Stormy” Mayo, Senior Scientist, Director of Right Whale Habitat Studies, and Senior Advisor of the Disentanglement Program, Center for Coastal Studies, Provincetown, MA, to William Rossiter, Vice President, NY4WHALES, May 13, 2013.

³⁶ *Id.*

³⁷ Van der Hoop, J., Nousek-McGregor, A.E., Nowacek, D.P., Parks, S.E., Tyack, P., and Madsen, P., “Foraging rates of ram-filtering North Atlantic right whales,” *Functional Ecology*, published online May 11, 2019.

conclude: “Our findings highlight that right whales acquire their energy in a relatively short period of intense foraging; even moderate changes in their feeding behavior or their prey energy density are likely to negatively impact their yearly energy budgets and therefore reduce fitness substantially.” North Atlantic right whales are already experiencing significant food-stress; thus, the protection of North Atlantic right whales during foraging, and the protection of their foraging habitat, must be one of NMFS’ utmost priorities.

North Atlantic right whales also occur in the waters off New York year-round at varying densities.³⁸ Long-term (2004-2014) and short-term (2008-2009) passive acoustic monitoring data demonstrate North Atlantic right whales maintain a high level of presence off New York through the winter and into March and April, before shifting further offshore and northwards in May.³⁹ A higher expected density of North Atlantic right whales off New York is reflected by the dates of the NMFS’ Seasonal Management Areas (“SMAs”) for New York Harbor and adjacent waters to east of Long Island extending to Block Island, which are in place from November 1 through April 30.⁴⁰ In the New York Bight, an extensive database of whale occurrence comprising multiple data sources indicates that, in the spring, peak sightings of North Atlantic right whales were found to occur in April even though sampling effort was greatest in the summer and early fall;⁴¹ however, elevated densities are still expected for May.⁴²

The best available scientific information therefore demonstrates that November 1 through May 14 in the Lease Areas and northern corridors, and November 1 through April 30 in the waters off New York (the other potential corridor), represents the time of highest risk to North Atlantic right whales. These dates are based on times of highest relative density of animals during their migration, and times when mother-calf pairs, pregnant females, surface active groups (indicative of breeding or social behavior), or aggregations of three or more whales (indicative of feeding or social behavior) are, or are expected to be, present.⁴³ That said, given that North Atlantic right whales are detected year-round within the Project area, there is a clear need for strong and effective mitigation measures to be in place year-round.

³⁸ Davis, G.E., *et al.*, *supra* note 23; Muirhead, C.A., Warde, A. W., Biedron, I.S., Mihnovets, A.N., Clark, C.W., and Rice, A.N., “Seasonal acoustic occurrence of blue, fin, and North Atlantic right whales in the New York Bight,” *Aquatic Conservation: Marine and Freshwater Ecosystems*. (Published online: February 2, 2018); Dr. C. Good *pers. comm.* to Dr. F. Kershaw, March 12, 2018.

³⁹ Davis, G.E., *et al.*; Muirhead, C.A., *et al.*, *id.*

⁴⁰ NOAA-NMFS, “Reducing ship strikes to North Atlantic right whales.” Available at: <http://www.nmfs.noaa.gov/pr/shipstrike/>.

⁴¹ Data sources: Halpin, P. N., Read, A. J., Fujioka, E., Best, B. D., Donnelly, B., Hazen, L. J., ... Hyrenbach, K.D., “OBIS-SEAMAP: The world data center for marine mammal, sea bird, and sea turtle distributions,” *Oceanography*, vol. 22, pp. 104-115 (2009); Conserve Wildlife Foundation of New Jersey (on behalf of the New Jersey Division of Fish and Game Endangered and Nongame Species Program).

⁴² Davis, G.E., *et al.*; Muirhead, C.A., *et al.*

⁴³ Over a dozen wildlife conservation organizations recently endorsed a suite of Best Management Practices (“BMPs”) for the protection of the North Atlantic right whale during wind energy construction and operations of fixed foundation offshore wind projects off the U.S. East Coast. The BMPs include criteria to define times of highest risk to North Atlantic right whales. While the BMPs focus on construction and operations, the criteria to define times of highest risk are directly transferable to inform mitigation measures for site assessment and characterization activities. Available at: <https://www.nrdc.org/resources/best-management-practices-north-atlantic-right-whales-during-offshore-wind-energy>.

II. INCONSISTENCIES BETWEEN THE PROPOSED IHA AND THE MARINE MAMMAL PROTECTION ACT

- A. *To fulfill its statutory requirements to consider the best scientific information available, NMFS must analyze all data sources when calculating densities of marine mammals, including the North Atlantic right whale*

NMFS must base its IHA analysis on the best available scientific information to comply with statutory requirements of the MMPA.⁴⁴ Here, in determining the proportion of marine mammal species and populations taken by the proposed activities—a calculation that lies at the heart of the agency’s “small numbers” analysis—NMFS relies on estimates of marine mammal densities derived from the habitat-based density model produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts et al. 2016, 2017, 2018).⁴⁵ While the Proposed IHA notes that this model has been updated to incorporate additional data sources and two more years of data,⁴⁶ it still excludes data obtained through additional sightings databases, passive acoustic monitoring, and satellite telemetry. It is our view that the density maps produced by this model do not fully reflect the abundance, distribution, and density of marine mammals for the U.S. East Coast and therefore should not be the only information source relied upon when estimating take.

Integration of opportunistic sightings data and other sources of data that collect fine-scale information on factors driving marine mammal distribution with those gathered through systematic broad-scale surveys would better reflect current marine mammal presence, abundance, and density off Massachusetts, Rhode Island, Connecticut, and New York, and provide a more accurate assessment of Level B take. **It should be NMFS’ top priority to consider any initial data from State monitoring efforts,⁴⁷ passive acoustic monitoring data, opportunistic marine mammal sightings data, and other data sources. Further, NMFS should take steps now to develop a dataset (see also recommendations in Section III.A.) that more accurately reflects marine mammal presence so that it is in hand for future IHA authorizations and other work.**

- B. *NMFS should establish conservative take numbers for endangered North Atlantic whales*

Given the new propagation model Vineyard Wind proposes to estimate Level A and B takes, we urge NMFS to be conservative in its estimates. We appreciate the agency’s thoughtful consideration of Vineyard Wind’s new model,⁴⁸ and share NMFS’s concerns relevant to demarcating continuous from impulsive noise. As noted by NMFS in the Proposed IHA:

⁴⁴ 16 U.S.C. §§ 1362(19), §§ 1362(27).

⁴⁵ 85 Fed. Reg. at 7969; see also Roberts J.J., Best B.D., Mannocci L., Fujioka E., Halpin P.N., Palka D.L., Garrison L.P., Mullin K.D., Cole T.V.N., Khan C.B., McLellan W.M., Pabst D.A., and Lockhart G.G., “Habitat-based cetacean density models for the U.S. Atlantic and Gulf of Mexico,” *Scientific Reports*, vol. 6, p. 22615 (2016).

⁴⁶ 85 Fed. Reg. at 7969.

⁴⁷ See, e.g., <http://www.masscec.com/offshore-wind-marine-wildlife-surveys>.

⁴⁸ 85 Fed. Reg. at 7967.

As part of this model, sources that operate with a repetition rate greater than 10 Hz were assessed with the non-impulsive source criteria while sources with a repetition rate equal to or less than 10 Hz were assessed with the impulsive source criteria. Under this system all HRG sources would be classified as impulsive. NMFS does not agree with the classification of all HRG sources as impulsive. The use of the 10 Hz repetition rate would be precedent-setting and NMFS believes that this issue requires further evaluation. However, NMFS opted to include the modeled Level A distances in the proposed IHA, since classification of all HRG sources as impulsive results in more conservative Level A harassment isopleths.⁴⁹

While it appears that the agency's application of the new model to Level A take estimates – of which none are anticipated or proposed for authorization – may be a more conservative approach to Level A take estimates, we appreciate that NMFS has decided not to use Vineyard Wind's model for Level B takes.

Regarding the Level B takes proposed in the IHA, we share NMFS' concerns: limiting Level B of North Atlantic right whales is absolutely necessary given the species' dire conservation status; however, in the model above we dispute the level of confidence it placed on the effectiveness of the proposed mitigation measures. Our reasons include: (i) the agency's reliance on a 160 dB threshold for behavioral harassment that is not supported by the best available scientific information in other low- to mid-frequency sources⁵⁰ (demonstrating Level B takes will occur with near certainty at exposure levels well below the 160 dB threshold); (ii) the geographic and temporal extent, as well as the 24-hour nature of the survey activities proposed to be authorized; and (iii) the unjustified reliance on the assumption that marine mammals will avoid sound⁵¹ despite studies that have found avoidance behavior is not generalizable among species and contexts.⁵² Further, avoidance itself may constitute a take under the MMPA. **Collectively, the agency's assumptions regarding mitigation effectiveness are unfounded and cannot be used to justify any reduction in the number of takes authorized.**

⁴⁹ 85 Fed. Reg. at 7968.

⁵⁰ See, e.g., Nowacek, D.P., Johnson, M.P., and Tyack, P.L., "Right whales ignore ships but respond to alarm stimuli," *Proceedings of the Royal Society of London, Pt. B: Biological Sciences* 271: 227-231 (2004); Kastelein, R.A., Steen, N., Gransier, R., and de Jong, C.A.F., "Threshold received sound pressure levels of single 1-2 kHz and 6-7 kHz up-sweeps and down-sweeps causing startle responses in a harbor porpoise (*Phocoena phocoena*)," *Journal of the Acoustical Society of America*, vol. 131, pp. 2325-2333 (2012); Kastelein, R.A., van den Belt, I., Gransier, R., and Johansson, T., "Behavioral response of a harbor porpoise (*Phocoena phocoena*) to 25.5- to 24.5-kHz sonar down-sweeps with and without side bands," *Aquatic Mammals*, vol. 41, pp. 400-411 (2015).

⁵¹ See, e.g., 85 Fed. Reg. at 7964.

⁵² Miller, P.J.O., Johnson, M.P., Madsen, P.T., Biassoni, N., Quero, M. and Tyack, P.L., "Using at-sea experiments to study the effects of airguns on the foraging behavior of sperm whales in the Gulf of Mexico," *Deep-Sea Research I*, vol. 56, pp. 1168-1181 (2009); Pirootta, E., Milor, R., Quick, N., Moretti, D., Di Marzio, N., Tyack, P., Boyd, I., and Hastie, G., "Vessel noise affects beaked whale behavior: Results of a dedicated acoustic response study," *PLoS ONE*, vol. 7, art. e42535 (2012).

C. Any IHA extension does not comport with the plain language of the statute

NMFS, again, requests comment on the potential one-year renewal of this Proposed IHA on a case-by-case basis for identical or nearly identical activities, with only an additional 15 days for public comment, should various criteria be met.⁵³

For several reasons, our organizations have opposed this process as contrary to law. First, NMFS' proposal to provide one-year renewals does not comport with the plain language of the statute. Section 101(a)(D)(i) unambiguously states that incidental harassment authorizations are valid for periods of not more than one year.⁵⁴ Second, the statute is clear on its face that a 30 day comment period is required in all instances. An agency must publish a proposed authorization (45 days after receipt of an application) and the duration of the public comment period (30 days after publication).⁵⁵ The legislative history of the 1972 Act demonstrates that Congress viewed a robust notice and comment process as central to the agency's implementation of the IHA process stating: "As approved by the Committee, the [MMPA] involves a number of basic concepts," one being that "the public is invited and encouraged to participate fully in the agency decision-making process."⁵⁶ When NMFS adheres to this process, "the public is assured of the right to be informed of actions taken or proposed."⁵⁷ Third, the legislative history removes any doubt that this 30 day comment period applies even in cases where the application extends the IHA for another year without change.⁵⁸

In our view, the agency lacks discretionary authority to interpret the statute otherwise, whether by regulation, by policy, or on a permit-by-permit basis as it purports to do here.⁵⁹ Moreover, NMFS has not supplied a sufficient explanation for why it might assert that the statutory language of sec. 101(a)(5)(D)(iii) is ambiguous, such that the agency might appropriately exercise its congressionally-delegated gap-filling authority to set forth a permissible interpretation of the statute that comports with the statute's objectives.⁶⁰

Should the agency wish to establish its new IHA renewal process as a reasonable interpretation of an ambiguous statutory provision, it should do so through notice-and-comment rulemaking or comparable process with the appropriate indicia of formality. In so doing, NMFS must also explain why applicants whose activities may result in the incidental harassment of marine mammals over more than one year should not be required to apply for authorization to do so

⁵³ 85 Fed. Reg. at 7952.

⁵⁴ 16 U.S.C. § 1371(a)(5)(D)(i).

⁵⁵ *Id.* § 1371(a)(5)(D)(iii).

⁵⁶ H.R. Rep. No. 92-707, at 4151 (1972), *reprinted in* 1972 U.S.C.C.A.N. 4144, 4151.

⁵⁷ *Id.* at 4146.

⁵⁸ H.R. Rep. No. 103-439, at 29 (1994).

⁵⁹ *See Chevron, U.S.A., Inc. v. NRDC*, 467 U.S. 837, 842-43 (1984) ("If the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress.").

⁶⁰ *See Northpoint Tech. Ltd. v. FCC*, 412 F.3d 145, 151 (D.C. Cir. 2005) (a "'reasonable' explanation of how an agency's interpretation serves the statute's objectives is the stuff of which a 'permissible' construction is made").

through the incidental take regulation procedure established by sec. 101(a)(5)(A)(i), which provides for authorizing incidental take during periods of “*not more than five consecutive years each.*”⁶¹ Where Congress established clear and distinct statutory processes for authorizing incidental take via harassment for one-year periods versus periods extending more than one year and up to five years, NMFS must justify how its proposed unlawful hybrid administrative extension process, with a curtailed comment period, is consistent with both statutorily-established processes.

Finally, NMFS’ recently posted language about Incidental Harassment Authorization Renewals on its website⁶² does not provide a clear and legally adequate justification for its purported new reauthorization process especially in light of the burden the foreshortened comment period places on interested members of the public to review and formulate comments, all within 15 calendar days. As NMFS apparently intends the new reauthorization process to become the rule rather than the exception,⁶³ it is incumbent on the agency to set forth, via proposed regulation or policy document, its rationale for this new process and to allow public comment.

III. RECOMMENDATIONS FOR IMPROVED MITIGATION AND MONITORING

In authorizing “take” by incidental harassment under the general authorization provision of the MMPA, NMFS must prescribe “methods” and “means of effecting the least practicable adverse impact” on marine mammals and set additional “requirements pertaining to the monitoring and reporting of such taking.”⁶⁴ In light of the aforementioned inconsistencies between the agency’s analysis and the requirements of the MMPA, as well as the risks posed to the North Atlantic right whale and other endangered and/or strategic marine mammal stocks by the site assessment and characterization activities outlined in the Proposed IHA, NMFS has an obligation to impose robust avoidance, minimization, mitigation, and monitoring requirements to protect these species to the maximum extent practicable.

The best scientific and commercial data available shows that the North Atlantic right whale population cannot withstand any additional stressors; any potential interruption of foraging behavior may lead to population-level effects and is of critical concern.⁶⁵ As such, **the agency must carefully analyze the cumulative impacts from the proposed survey activities and other survey activities contemplated in the other lease areas on the North Atlantic right whale and other protected species.**

⁶¹ 16 U.S.C. § 1371(a)(5)(A)(i) (emphasis added). *See also id.* at § 1371(a)(5)(A)(i)(I) (negligible impact finding must evaluate total of such taking “during each five-year (*or less*) period concerned”) (emphasis added).

⁶² *See* <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>.

⁶³ Beginning on March 7, 2019, NMFS has issued notice of this new reauthorization process for a multitude of permits. *See, e.g.*, 84 Fed. Reg. 8312 (Mar. 7, 2019); 84 Fed. Reg. 8316 (Mar. 7, 2019); 84 Fed. Reg. 11,508 (Mar. 27, 2019); 84 Fed. Reg. 13,246 (Apr. 4, 2019); 84 Fed. Reg. 14,200 (Apr. 9, 2019); 84 Fed. Reg. 15,598 (Apr. 16, 2019); 84 Fed. Reg. 17,384 (Apr. 25, 2019); 84 Fed. Reg. 17,784 (Apr. 26, 2019); 84 Fed. Reg. 17,788 (Apr. 26, 2019); 84 Fed. Reg. 18,346 (Apr. 30, 2019); 84 Fed. Reg. 18,495 (May 1, 2019); 84 Fed. Reg. 18,801 (May 2, 2019); 84 Fed. Reg. 18,809 (May 2, 2019); 84 Fed. Reg. 20,336 (May 9, 2019).

⁶⁴ 16 U.S.C. § 1371(a)(5)(D)(vi).

⁶⁵ Van der Hoop, *et al.*

The implementation of a robust impact avoidance, minimization, mitigation, and monitoring protocol to prevent adverse impacts of the proposed survey activities is therefore essential and required by law. Our recommendations are below.

A. Seasonal restriction on geophysical surveys in the Lease Areas between November 1, 2020 and May 14, 2021

As described above (*see*, Section I.A.), NMFS is proposing to authorize geophysical surveys off Rhode Island, Massachusetts, Connecticut and New York at times when North Atlantic right whales are expected to be present at high densities and foraging (among other activities). The survey period is intended to commence April 1, 2020 and continue through March 31, 2021.⁶⁶ Surveys will be conducted 24-hours a day by up to eight survey vessels, for an estimated total of 736 vessel days.⁶⁷

NMFS has an obligation to use the best available scientific information, which includes standardized survey data as passive acoustic and opportunistic detections. As such, NMFS must incorporate all currently available information to elucidate and balance the relative risks to these species, for which there is relatively limited data. Therefore, NMFS should: 1) fund analyses of recently collected sighting and acoustic data for all data-holders; and 2) continue to fund and expand surveys and studies to improve our understanding of distribution and habitat use of marine mammals across this region, including the Lease Areas. Only then can the most effective seasonal restrictions and mitigation measures be considered in a year-round context. In the absence of such information, the agency should, as noted above, apply precautionary measures for the time-period proposed (*i.e.*, November 1 to May 14), which is based on the best available scientific information.

Time and area restrictions are the most effective means to reduce the potential impacts of noise and disturbance on marine mammals, including noise from geophysical surveys of a level capable of potentially causing Level A and Level B harassment.⁶⁸ While we appreciate that the Proposed IHA limits HRG survey activities in the Cape Cod Bay SMA and Off Race Point SMA to the months of August and September to account for known seasonal aggregations⁶⁹ in designated North Atlantic right whale critical habitat, this restriction is not protective enough.

⁶⁶ 85 Fed. Reg. at 7953.

⁶⁷ *Id.*

⁶⁸ *See, e.g.*, Agardy, T., Aguilar Soto, N., Cañadas, A., Engel, M., Frantzis, A., Hatch, L., Hoyt, E., Kaschner, K., LaBrecque, E., Martin, V., Notarbartolo di Sciara, G., Pavan, G., Servidio, A., Smith, B., Wang, J., Weilgart, L., Wintle, B., and Wright, A., “A global scientific workshop on spatio-temporal management of noise,” Report of workshop held in Puerto Calero, Lanzarote (June 4-6, 2007); Dolman, S., Aguilar Soto, N., Notarbartolo di Sciara, G., and Evans, P., “Technical report on effective mitigation for active sonar and beaked whales,” Working group convened by European Cetacean Society (2009); Memorandum from Dr. Jane Lubchenco, NOAA Administrator, to Ms. Nancy Sutley, CEQ Chair (Jan. 19, 2010); Convention on Biological Diversity, “Scientific synthesis on the impacts of underwater noise on marine and coastal biodiversity and habitats,” UN Doc. UNEP/CBD/SBSTTA/16/INF/12 (2012).

⁶⁹ 85 Fed. Reg. at 7971.

Consistent with right whales' use of the Lease Areas, as well the scale and cumulative acoustic impact of the intensive survey activity proposed (by Vineyard Wind and other developers), NMFS should prohibit all survey activities with the potential to injure or harass North Atlantic right whales (*i.e.*, source level >180 dB re 1 uPa at 1 meter frequencies between 7 and 35 kHz)⁷⁰ between November 1st and May 14.th These dates currently reflect both the best available science on the relative density of North Atlantic right whales in Southern New England (recognizing that individuals of this species could be present in each month of the year; *see* Section I.C), and the fact that the species is increasingly reliant on this area year round as foraging habitat. These dates should be reviewed annually and revised as necessary to reflect the best available scientific information.

Further, while existing and potential stressors to the North Atlantic right whale must be minimized to promote the survival and recovery of the species, the agency must also address potential impacts to other endangered and protected whale species, particularly in light of the UMEs declared for right whales, humpback whales and minke whales,⁷¹ as well as the several strategic and/or depleted stocks that inhabit the region (*see* Sections I.B. through I.D.). It is therefore imperative that consequences of the proposed North Atlantic right whale seasonal restriction on other endangered and protected species be fully accounted for by the agency. While we acknowledge and appreciate that the Proposed IHA limits the number of survey vessels operating concurrently to no more than three vessels in select areas between March and June when North Atlantic right whale densities are expected to be elevated,⁷² the Seasonally Restricted Areas proposed do not encompass the full time period when, according to best available science, North Atlantic right whales are likely to be present in the area. As discussed above (*see* Section I.C), November 1st through at least May 14th represents the period of highest risk to North Atlantic right whales in or near the Lease Areas, critical months remain without seasonal protections. While NMFS insists that “any displacement of whales from the BIA [Biologically Important Area] or interruption of foraging bouts would be expected to be temporary in nature. Therefore, we do not expect whales with feeding BIAs to be negatively impacted by the proposed survey”; the operation of up to eight survey vessels at any one time presents a significant potential for cumulative disturbance during the foraging period.⁷³

B. Geophysical surveys should only commence, with ramp-up, during daylight hours

Vineyard Wind proposes HRG survey activities south of Cape Cod conducted continuously 24 hours per day for up to 365 calendar days, with as many as 8 survey vessels operating

⁷⁰ As previously noted, the best available science on other low- to mid-frequency sources (*e.g.*, Nowacek et al. 2004, Kastelein et al. 2012, 2015) indicates that Level B takes will occur with near certainty at exposure levels well below the 160 dB threshold that NMFS applies to behavioral impacts.

⁷¹ NOAA-NMFS, “North Atlantic right whale Unusual Mortality Event,” *supra* note 15; NOAA-NMFS, “2016-2018 Humpback whale Unusual Mortality Event along the Atlantic Coast,” *supra* note 16; NOAA-NMFS, “2017-2018 Minke whale Unusual Mortality Event along the Atlantic Coast,” *supra* note 16.

⁷² 85 Fed. Reg. at 7972.

⁷³ 85 Fed. Reg. at 7975.

concurrently using several different equipment types that have the potential to harass marine species.⁷⁴

In our view, geophysical surveys should only commence, with ramp-up, during daylight hours of adequate visibility⁷⁵ to maximize the probability that North Atlantic right whales are detected and confirmed clear of the exclusion zone. If the exclusion zone is clear, we do not oppose the survey continuing into nighttime hours. However, if the survey is shut down for any reason, developers should be required to wait until daylight hours and good visibility for ramp-up to resume. **Furthermore, as PSOs are unable to visually monitor the exclusion area during nighttime hours, NMFS must require, for efforts that continue into the nighttime, a combination of night-vision, thermal imaging, and passive acoustic monitoring.**

We note that the effectiveness of night vision and infrared technology in detecting marine mammals, including large whales, has not yet been tested and published for this geographic region. In general, night vision equipment, relying on image intensifying technology, has not been widely used or tested for marine mammal monitoring, and is considered to be heavily affected by environmental conditions often present at sea. Infrared technology, relying on thermal differences between the target species and the environment, has shown promise for night time detection of a number of marine mammal species from vessels.⁷⁶ However, the application of infrared technology as a mitigation tool is still in development and a number of studies have reported varying results depending on the type of equipment used, the environmental conditions, and the species in question.

The agency should review and approve night vision and infrared equipment prior to reliance on this untested technology to reduce survey risk. In doing so, NMFS must consider the limitations of each system proposed and ensure that the detection of marine mammals is possible at distances out to and beyond the exclusion zones, in the geographic region in question, and for all relevant endangered and protected species. The reduced temperature differential between whale blow and the surrounding water expected for to occur in the survey area, particularly during the spring and summer, in contrast to the far cooler high-latitude waters, is likely to negatively impact the detection effectiveness of infrared.⁷⁷ These technologies have also not been well tested for detection of North Atlantic right whales and may be relatively ineffective for detecting minke whales,⁷⁸ both species of concern in light of the current UMEs declared for the Atlantic coast. Further, NMFS should encourage developers to partner with scientists and collect data that increases our understanding of the effectiveness of night vision and infrared technologies off the

⁷⁴ 85 Fed. Reg. at 7954.

⁷⁵ Adequate visibility should be determined by the lead PSO based on standardized environmental parameters (e.g., visibility, glare, sea state, wind speed).

⁷⁶ Lathlean, J. and Seuront, L., "Infra-red thermography in marine ecology: methods, previous applications and future challenges," *Marine Ecology Progress Series*, vol. 514, p. 263-277 (2014).

⁷⁷ *Id.* Cuyler, L.C., Wiulsrød, R., and Øritsland, N.A., "Thermal IR Radiation from Free Living Whales," *Marine Mammal Science*, vol. 8, p. 120-134 (1992).

⁷⁸ Cuyler, L.C., et al., *supra* note 76.

Project Area, with a view towards greater reliance on these technologies to commence surveys during nighttime hours in the future.

Without verified means of monitoring through night-vision and/or thermal imaging, NMFS' lack of a requirement to use passive acoustic monitoring during surveys is particularly concerning. **Vineyard Wind has committed to employ passive acoustic monitoring during nighttime operations during select times of the year when North Atlantic right whale presence is expected to be high.⁷⁹ This technology should be adopted for all times of HRG effort -- not only nighttime hours -- to maximize the probability of detection for North Atlantic right whales.⁸⁰** Further, is it essential that passive acoustic monitoring not be used as the sole detection measure, as many right whales traveling with calves do not vocalize. PSO use is therefore key to proper detection; for this reason, restarting operations in the night or at times of poor visibility is an unacceptable risk to the species' health.

C. Minimum radii of exclusion zones should be increased and maintained throughout survey activities

The Proposed IHA establishes a marine mammal exclusion zone around HRG equipment and monitored by PSOs during HRG surveys as follows: 500 m exclusion zone for North Atlantic right whales; and 100 m exclusion zone for other marine mammals, including large whales (except North Atlantic right whales).⁸¹ However, the definition of exclusion zone radii based on the acoustic thresholds laid out in the NMFS technical guidance document significantly underestimates the area in which marine mammals, including large whales, may experience noise at levels capable of causing behavioral harassment (*i.e.*, received level <160 dB).⁸² Neither of these exclusion zones are protective enough.

Specifically, any potential harassment of the North Atlantic right whale is a significant concern and a 500 m exclusion zone is simply not sufficient. **NMFS must require use of monitoring practices that ensure a 500 m exclusion zone around all vessels conducting activities with noise levels that could result in injury or harassment to these species** based on the best available science, with the exception of dolphins that, in the determination of PSOs, are voluntarily approaching the vessel. **Additionally, PSOs should, to the extent feasible, monitor beyond the minimum 500 m exclusion zone to an extended 1,000 m exclusion zone for North Atlantic right whales.**⁸³ Exclusion zones should also be expanded beyond minimum distances if sound source validation data support such extensions.

⁷⁹ Seasonal operating locations and times can be found at 85 Fed. Reg. at 7972, 7973.

⁸⁰ 85 Fed. Reg. at 7973.

⁸¹ 85 Fed. Reg. at 7971, 7972.

⁸² See, e.g., Wright, A.J., "Sound science: Maintaining numerical and statistical standards in the pursuit of noise exposure criteria for marine mammals." *Frontiers in Marine Science*, vol. 2 (2015).

⁸³ As recommended by Drs. S.D. Kraus, C. Good, and H. Bailey *pers. comm.* to F. Kershaw and M. Jasny (October 24, 2017).

D. A combination of Protected Species Observers and passive acoustic monitoring must be employed at all times

The Proposed IHA notes that NMFS only requires a single PSO on duty during daylight hours and 30 minutes prior to and during nighttime ramp-ups for HRG surveys⁸⁴ but, that, Vineyard Wind has “voluntarily proposed that a minimum of two (2) NMFS-approved PSOs must be on duty and conducting visual observations on all survey vessels at all times when HRG equipment is in use.”⁸⁵ The additional observer is necessary, however, the proposal remains insufficient because the ability to detect marine mammals is highly dependent on the species and behavior, and experts recommend a combination of monitoring methods be employed to maximize detectability,⁸⁶ including passive acoustic monitoring.

Visual observations are not enough. In addition to sighting condition limitations discussed below, studies suggest that North Atlantic right whales exhibit behaviors that reduce the likelihood that they would be detected by PSOs and therefore often go undetected by observers. For example, acoustic surveys have detected North Atlantic right whale vocal presence throughout the year and over the entire spatial extent of a study area in Massachusetts Bay,⁸⁷ even though visual surveys have rarely reported sightings of North Atlantic right whales in the winter off the coast of Massachusetts.⁸⁸ Aerial surveys were found to detect North Atlantic right whales on only two-thirds of the days they were acoustically detected in Cape Cod Bay, Massachusetts, from 2001 to 2005.⁸⁹ Additionally, there is evidence that North Atlantic right whales spend significantly more time at subsurface depths (1-10 m) compared to normal surfacing periods (within 1 m of the surface) when exposed to certain types of acoustic disturbance.⁹⁰ These behavioral responses are likely to be heightened when whales are in the proximity of the acoustic disturbance from geophysical surveys, meaning that animals may be less detectable by observers during the survey period relative to other times of the year.⁹¹

⁸⁴ 85 Fed. Reg. at 7971.

⁸⁵ *Id.*

⁸⁶ See, e.g., Verfuss, U.K., Gillespie, D., Gordon, J., Marques, T.A., Millr, B., Plunkett, R., Theriault, J.A., Tollit, D.J., Zitterbart, D.P., Hubert, P., and Thomas, L., “Comparing methods suitable for monitoring marine mammals in low visibility conditions during seismic surveys.” *Marine Pollution Bulletin*, vol. 126, p.1-18 (2018).

⁸⁷ Morano, J.L., Rice, A.N., Tielens, J.T., Estabrook, B.J., Marray, A., Roberts, A.L., and Clarkm C.W., “Acoustically detected year-round presence of right whales in an urbanized migration corridor.” *Conservation Biology*, vol. 26, p. 698-707 (2012).

⁸⁸ Winn, H.E., Price, C.A., and Sorenson, P.W., “The distributional biology of the right whale (*Eubalaena glacialis*) in the western North Atlantic.” Report of the International Whaling Commission, Special Issue, vol. 10, p. 129-138 (1986); Pittman, S.J, Kot, C., Kenney, R.D., Costa, B., and Wiley, D., “Cetacean distribution and diversity.” In: Battista T., Clark R., Pittman S.(eds) *An ecological characterization of the Stellwagen Bank National Marine Sanctuary Region: oceanographic, biogeographic, and contaminants assessment*, p.264-324 (2006).

⁸⁹ Clark, C.W., Brown, M.W., and Corkeron, P., “Visual and acoustic surveys for North Atlantic right whales, *Eubalaena glacialis*, in Cape Cod Bay, Massachusetts, 2001-2005: Management Implications.” *Marine Mammal Science*, vol. 26, p. 837-854 (2010).

⁹⁰ Nowacek, D.P., Johnson, M.P., and Tyack, P.L., “North Atlantic right whales (*Eubalaena glacialis*) ignore ships but respond to alerting stimuli.” *Proceedings: Biological Sciences*, vol. 271, p. 227-231 (2004).

⁹¹ Robertson, F.C., Koski, W.R., Thomas, T.A., Richardson, W.J., Würsig, B., and Trites, A.W., “Seismic operations have variable effects on dive-cycle behavior of bowhead whales.” *Endangered Species Research*, vol. 21, p. 143-160 (2013).

There are sighting condition limitations. For even the most conspicuous large whale species, estimates of relative detection probability for a Beaufort sea state of 6 is less than half that for a Beaufort sea state of 0.⁹² Sea state has been demonstrated to have a direct effect on the sighting probability of North Atlantic right whales in the Lower Bay of Fundy and in Roseway Basin of the Southwest Scotian Shelf.⁹³ In line with Barlow (2015),⁹⁴ the probability of sighting a North Atlantic right whale in this area changed by a factor of 0.628 (95% CI: 0.428-0.921) for every unit increase in sea state.⁹⁵

These studies indicate the effect of increasing Beaufort Sea state in reducing the probability of detection of large whales, including the North Atlantic right whale. Based on the data collected by the National Buoy Data Center (*see* Table 1),⁹⁶ a monthly average Beaufort Sea state of 3 or 4 can be expected in close vicinity to the Lease Area, year-round, with the highest sea states from September to April. This is a salient consideration in the evaluation of whether a species can be adequately protected by species observers alone, given the moderate Beaufort Sea states in the vicinity of the Lease Areas during the months when the proposed surveys would take place.

Given these data, observers alone are certain to underestimate the number of large whales in the mitigation area based on sea state. From the findings of Baumgartner *et al.* (2003),⁹⁷ we would expect a reduction in detection probability of North Atlantic right whales by up to 84.5 percent based on an average Beaufort Sea state of 4, relative to ideal sighting conditions (*i.e.*, Beaufort Sea state = 0). Notably, the detectability of North Atlantic right whales even under ideal sighting conditions is likely to be significantly less than 100 percent given availability and perception biases other than those involving sea state.

Table 1. Monthly average wave height for 2018 and corresponding Beaufort Sea State recorded at NOAA National Data Buoy Station 44097 – Block Island, RI (154). Data source: NOAA National Data Buoy Center (Accessed: Aug 22, 2019).

Month	Wave Height (m)	Beaufort Sea State
January	1.9	4
February	1.5	4
March	2.1	5
April	1.6	4

⁹² Barlow, J., “Inferring trackline detection probabilities, $g(0)$, for cetaceans from apparent densities in different survey conditions,” *Marine Mammal Science*, vol. 31, p. 923-943 (2015).

⁹³ Baumgartner, M.F., Cole, T.V.N., Clapham, P.J., and Mate, B.R., “North Atlantic right whale habitat in the lower Bay of Fundy and on the SW Scotian Shelf during 1999-2001.” *Marine Ecology Progress Series*, vol. 264, p. 137-154 (2003).

⁹⁴ Barlow, J., “Inferring trackline detection probabilities, $g(0)$, for cetaceans from apparent densities in different survey conditions,” *supra* note 86.

⁹⁵ *Id.*

⁹⁶ NOAA-NWS, “National Data Buoy Center.” Available at: <http://www.ndbc.noaa.gov/>.

⁹⁷ Baumgartner, M.F., *et al.*

May	1.1	3	
June	0.9	3	
July	1.1	3	
August	0.9	3	
September	1.3	4	
October		1.6	4
November	1.9	4	
December	1.5	4	

Thus, reliance on a single PSO as the sole monitoring method during daylight hours would be under-protective. We urge NMFS to **require a shift schedule of the NMFS-approved PSOs aboard the survey vessel** with a minimum of four PSOs that follow a two-on two-off rotation, each responsible for scanning no more than 180° of the exclusion zone at any given time.

In addition to the visual monitoring by multiple PSOs discussed above, proposed mitigation should include passive acoustic monitoring implemented 24 hours a day. Research has demonstrated that passive acoustic monitoring can provide a two- to ten-fold increase in the number of days that right whales are detected relative to visual methodologies.⁹⁸ The passive acoustic protocol should be designed so the hydrophone is not masked by vessel or survey noise. We also support the inclusion of both broadband and low frequency hydrophones, which will serve to ensure that North Atlantic right whale vocalizations, as well as those of other low- and mid-frequency vocalizing species, can be detected. However, it should be noted that passive acoustic monitoring without visual observers would also be insufficient as cow-calf pairs often do not vocalize to avoid predators.

Finally, we support the IHA’s requirement for a 30-minute pre-clearance period and to immediately shut down survey activity upon the visual observation of a North Atlantic right whale.

E. Vessel strike measures

The Proposed IHA acknowledges that vessel strikes can kill animals, that speed is a factor, and that North Atlantic right whales are particularly vulnerable because they are “generally unresponsive to vessel sound” and “more susceptible to vessel collisions,” yet it only discusses the impacts of the survey vessels traveling at speeds less than 4 knots.⁹⁹ This ignores the impacts of all other project vessels operating in the Project Area on right whales. While we appreciate that the Proposed IHA expressly requires all vessels to observe a 10-knot speed restriction if NMFS has designated an SMAs or DMAs, the proposed measure would allow project vessels to

⁹⁸ Soldevilla, M.S., Rice, A.N., Clark, C.W., and Garrison, L. P., “Passive acoustic monitoring on the North Atlantic right whale calving grounds,” *Endangered Species Research*, vol. 25, pp. 115–140 (2014).

⁹⁹ 85 Fed. Reg. at 7965-7966.

travel at speeds greater than 10 knots at all other times, unless a right whale is actually observed within 100 meters.¹⁰⁰ This is insufficient.

Vessel collisions remain one of the leading causes of large whale injury and mortality and are a primary driver of the existing UMEs. Serious injury or mortality can occur from a vessel traveling above 10 knots irrespective of its length.¹⁰¹ The number of recorded vessel collisions on large whales each year is likely to grossly underestimate the actual number of animals struck, as animals struck but not recovered, or not thoroughly examined, cannot be accounted for.¹⁰² North Atlantic right whales are particularly prone to ship-strike given their slow speeds, their occupation of waters near shipping lanes, and the extended time they spend at or near the water's surface.¹⁰³ Some types of anthropogenic noise have been shown to induce sub-surface positioning in North Atlantic right whales, increasing the risk of ship-strike at relatively moderate levels of exposure.¹⁰⁴ It is possible that HRG surveys could produce the same effects, and should therefore be treated conservatively. The agency has a responsibility to implement mitigation measures to prevent any further vessel collisions for other species of large whale currently experiencing an UME (*i.e.*, humpback whales and minke whales), as well as other species such as fin whales, which, in light of the broad distributional shifts observed for multiple species, may be at potential future risk of experiencing an UME.

As noted in the Proposed IHA, studies indicate that noise can induce flight responses, behavioral disturbances, habitat avoidance, and stress responses which reduce feeding rates and reproductive success.¹⁰⁵ Because of the noise, HRG surveys could also cause horizontal displacement¹⁰⁶ and push a North Atlantic right whale out of a protected area (SMA or DMA) into an area where vessels are traveling at greater speed, presenting an even greater danger of vessel collision. Thus, habitat displacement produces an indirect ship strike risk that also must be accounted for in NMFS' analysis.

Given the dire status of right whales and the importance of the Project Area as foraging habitat, at a minimum, all project vessels (regardless of size) either transiting to/from or operating within the Project Area should observe a 10 knot speed restriction during times when mother-calf pairs, pregnant females, surface active groups, or aggregations of three or more whales are confirmed, or expected based on multi-year sightings data, to be in the area. **Vessels should only be**

¹⁰⁰ 85 Fed. Reg. 7972.

¹⁰¹ NOAA-NMFS, "Reducing ship strikes to North Atlantic right whales," *supra* note 40. To reflect the risk posed by vessels of any length, the Commonwealth of Massachusetts established a mandatory vessel speed restriction for all vessels (including under 20 meters) in the Cape Cod Bay SMA.

¹⁰² Reeves, R.R., Read, A.J., Lowry, L., Katona, S.K., and Boness, D.J., "Report of the North Atlantic Right Whale Program Review." 13–17 March 2006, Woods Hole, Massachusetts (2007) (prepared for the Marine Mammal Commission); Parks, S.E., Warren, J.D., Stamieszkin, K., Mayo, C.A., and Wiley, D., "Dangerous dining: surface foraging of North Atlantic right whales increases risk of vessel collisions." *Biology Letters*, vol. 8, p. 57-60 (2011).

¹⁰³ NMFS, "Recovery plan for the North Atlantic right whale" (August 2004).

¹⁰⁴ Nowacek, D.P., et al., *supra* note 956.

¹⁰⁵ 85 Fed. Reg. 7964.

¹⁰⁶ *E.g.*, Castellote, M., Clark, C.W., and Lammers, M.O., "Acoustic and behavioural changes by fin whales (*Balaenoptera physalus*) in response to shipping and airgun noise," *Biological Conservation*, vol. 147, pp. 115-122 (2012).

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permitted to exceed 10 knots if multiple additional monitoring measures are in place, including aerial surveys or a combination of vessel-based visual observers and passive acoustic monitoring.

IV. CONCLUSION

Thank you for considering our comments. For the reasons stated above, our organizations urge NMFS to revise its analysis for the Final IHA and to comply with its statutory obligations. We again request the opportunity to meet with you, and your staff, to discuss these matters.

Sincerely,

Alison Chase
Senior Policy Analyst, Oceans, Nature Program
Natural Resources Defense Council

Priscilla Brooks, Ph.D.
Vice President and Director of Ocean Conservation
Conservation Law Foundation

Catherine Bowes
Program Director, Offshore Wind Energy
National Wildlife Federation



DESAUTEL LAW

Marisa A. Desautel
marisa@desautelesq.com
401.477.0023

March 13, 2020

Jolie Harrison, Chief
Permits and Conservation Division, Office of Protected Resources,
National Marine Fisheries Service

**RE: COMMENTS ON THE DRAFT IHA FOR AGENCY/DOCKET NUMBER RTID
0648-XR078**

Dear Ms. Harrison,

This office represents the Rhode Island Fishermen's Advisory Board, an advisory body to the state's Coastal Resources Management Council, the body charged with managing the state's coastal program under the Coastal Zone Management Act. The FAB responds during this commenting period to relay its four concerns with the Draft IHA as currently written. The FAB is requesting: more consideration on the numbers listed in the Draft IHA for takings per species, clearer and more detailed descriptions regarding the equipment used for the leaseholder's surveys and each equipment type's effects on marine mammals, an amendment to the Draft IHA's revocation language, and more information on whether nighttime surveying should be allowed.

“[T]o receive a ‘small take’ authorization, an activity must: (i) be limited to a ‘specified geographical region,’ (ii) result in the incidental take of only ‘small numbers of marine mammals of a species or population stock,’ and (iii) have no more than a ‘negligible impact’ on species and stocks.” *Nat. Res. Def. Council, Inc. v. Evans*, 279 F. Supp. 2d 1129,



1142 (N.D. Cal. 2003). A negligible impact is one that “cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.” 50 C.F.R. § 18.27(c).

1. LEVEL B HARASSMENT TAKES EXCEED THE “SMALL NUMBERS” AND “NEGLIGIBLE IMPACT” REQUIREMENTS.

In its Draft IHA for the Vineyard Wind Site Characterization Surveys off of Massachusetts, Rhode Island, Connecticut, and New York, NMFS is proposing to issue a permit to incidentally take, by Level B harassment, a particular number of each species in the study areas. **NMFS does not adequately justify these take numbers, particularly in allowing incidental take of 10 North Atlantic Right Whales despite finding that the population has declined by almost 1% annually since 2010 and elevated mortalities have further impacted the population since 2017.** Likewise, the other numbers for allowed take are unjustified, referring to them as a percentage of the entire population. **As NMFS stated in its Notice for the Proposed IHA, “[a]n estimate of the number of takes alone is not enough information on which to base an impact determination.”**

NMFS declared an unusual mortality event (UME) for North Atlantic Right Whales, where human interaction has been identified as the most likely cause. “Small numbers” and “negligible impact” are terms relative to the specific species being assessed: as the United States Court of Appeals for the Ninth Circuit held,

“[f]or example, anticipated harassment of even small numbers of mammals might prevent mating or reproduction during key parts of the year, or might result in lethal take of newborn mammals. These circumstances could pose more than a negligible impact on the relevant species or stock, even if they directly affect only



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small numbers of mammals relative to the population as a whole.” *Ctr. for Biological Diversity v. Salazar*, 695 F.3d 893, 906 (9th Cir. 2012).

Damage to any of the North Atlantic Right Whales is more than a negligible impact, given that their population is approximately 409 individuals, 30 have died since 2017 during the UME, and the species is endangered. The number given by NMFS in the allowed takes exceeds the “small numbers” requirement and adversely affects the survival and/or recruitment of the North Atlantic Right Whales (thus having more than a “negligible impact”). Feeding areas are present in the geographic area to be studied, which further emphasizes the potential impacts to this species.

There has been a decline in the Minke whale population recently as well; “[s]ince January 2017, elevated minke whale strandings have occurred along the Atlantic coast from Maine through South Carolina, with highest numbers in Massachusetts, Maine, and New York[,]” where human interaction and/or infectious disease may be to blame. This, too, resulted in an UME being declared for the Minke whales – 80 have died since 2017. Their population and the risks to the population due to the proposed activity must be analyzed further.

It should be noted that the beginning year for the Minke whale and Right whale mortalities, 2017, coincides with increased activity in the impacted region (northeast for Right whales, Maine-South Carolina for Minke whales) related to increases in human development within the ocean across the same geographic span. The Block Island Wind Farm was operational at the end of 2016, with construction occurring in 2015 as well, and other lease areas were undergoing surveying through this time period to the present.¹ NMFS stated in the Notice for the Proposed IHA that “the impacts from other past and ongoing anthropogenic activities are

¹ See, e.g., <https://www.boem.gov/renewable-energy/state-activities>.



incorporated into this analysis via their impacts on the environmental baseline (e.g., as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels,” but the IHA and supporting documents make no mention of the past and on-going anthropogenic activities despite the large number of leases for renewable energy along the eastern seaboard (particularly off of New England).

Additionally, Fin and Sei Whales are endangered under the ESA and designated under the MMPA and Sperm Whales are endangered under the ESA, as are Long-finned pilot whales. Their allowed-take numbers merit closer study as well.

The assessment of whether there are “small numbers” affected, and whether there is only a “negligible impact,” should be assessed in further detail than simply listing the percentages of potentially-impacted individuals compared to the species as a whole, particularly for North Atlantic Right Whales.

2. THE DRAFT NEEDS A CLEARER DESCRIPTION OF THE STUDY

EQUIPMENT TO BE USED AND EACH’S POTENTIAL EFFECTS ON MARINE MAMMALS.

Referring to the various pieces of equipment to be used in HRG surveying creates false homogeneity where such does not exist. The Boomers and Sparkers in particular are capable of producing greater effects on marine mammals. They are only feet from the seafloor while surveying, and can penetrate well into the seafloor. The Draft IHA should take these differences into account, describe each type of survey activity that will be used by the leaseholder during the



survey studies, and describe what the effects on marine mammals could be for each.

3. THE DRAFT’S REVOCATION LANGUAGE REQUIRES AMENDMENT.

16 U.S.C. § 1539(a)(2)(C) states that NMFS **shall** revoke the permit if it finds the permittee is not complying with the terms and conditions of the permit; thus, the language of the draft IHA should reflect this instead of saying that “[t]his Authorization may be modified, suspended or withdrawn if the holder fails to abide by the conditions prescribed herein. . .”

4. MORE CONSIDERATION OF NIGHTTIME SURVEY ACTIVITIES IS NEEDED.

Finally, it is the FAB's position that the Draft IHA does not adequately discuss whether nighttime survey activity can be effectively monitored by the two required Protected Species Observers. The Draft IHA considers use of night-vision goggles and/or infrared technology. While these may work under some conditions, it is unlikely that they would be sufficient for sea states above a flat calm. Information regarding the efficacy of using night-vision equipment in monitoring marine mammals in the area should be included and addressed.

We thank NMFS for their incorporation of these comments in the final IHA. Please reach out to our office to discuss any of these comments.

Sincerely,

Marisa Desautel, Esq.