



MARINE MAMMAL COMMISSION

3 June 2019

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 application submitted by Vineyard Wind, LLC (Vineyard Wind), seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act (the MMPA) to take small numbers of marine mammals by harassment. The taking would be incidental to construction of commercial wind energy turbines and associated facilities off Massachusetts beginning in August 2020. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 30 April 2019 notice (84 Fed. Reg. 18346) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

Background

Vineyard Wind proposes to construct an 800 megawatt offshore wind farm approximately 23 km southeast of Martha's Vineyard. The proposed wind farm would consist of up to 100 wind turbine generators (WTGs) and one or more electrical service platforms (ESPs). Two foundation types are proposed for installation of the WTGs and ESPs—monopiles and jacket piles. The monopile foundations would consist of a single steel pipe pile with a maximum diameter of up to 10.3 m. The jacket foundations would include three or four steel jacket piles approximately 3 m in diameter. Vineyard Wind considered two installation scenarios: (1) the "maximum" design would install 90 monopiles and 12 jacket-type foundations and (2) the "most likely" design would install 100 monopiles and 2 jacket-type foundations. A maximum of two monopiles or one jacket-type foundation would be installed per day using an impact hammer. A vibratory hammer also may be used to seat piles prior to impact driving. Pile driving could occur on up to 102 days.

NMFS preliminarily has determined that the proposed activities could cause Level A and B harassment of small numbers of 15 species of marine mammals, but that the total taking would have a negligible impact on the species or stocks. NMFS does not anticipate any lethal take of marine mammals. NMFS believes that the potential for take by Level A and B harassment would be at the least practicable level because of the proposed mitigation measures. The proposed mitigation, monitoring, and reporting measures include—

- prohibiting pile driving activities from 1 January through 30 April to protect North Atlantic right whales;
- using a sound attenuation device (i.e., a bubble curtain, noise abatement system, etc.) during impact pile driving and implementing measures regarding performance standards if a bubble curtain is used;
- conducting in-situ sound source and sound propagation measurements during installation of the largest diameter monopile, with and without noise attenuation, and during installation of the largest jacket pile;
- using sound measurements to adjust, as necessary, the Level A and B harassment zones¹ for the two pile types;
- using soft-start, delay, and shut-down procedures;
- using protected species observers to monitor the Level A and B harassment zones for 60 minutes before, during, and for 30 minutes after pile driving;
- using real-time passive acoustic monitoring (PAM) for at least 60 minutes prior to pile driving to monitor for North Atlantic right whales in an extended clearance zone of 10 km from 1 May to 14 May, which also must be monitored using an aerial or vessel-based survey, and from 1 November to 31 December;
- delaying resumption of pile driving after detection of a right whale until the following day or until a follow-up aerial or vessel survey confirms that all right whales have left the extended clearance zone;
- using standard vessel strike avoidance procedures during all pile-driving activities;
- reporting injured and dead marine mammals to the NMFS Office of Protected Resources and the New England Stranding Network Coordinator using NMFS's phased reporting approach and suspending activities, if appropriate; and
- submitting a final report to NMFS.

Incidental takes associated with vibratory pile driving

Vineyard Wind estimated Level B harassment takes associated with impact pile driving, but indicated that sound levels associated with vibratory pile driving would not be of concern due to its reduced sound levels, as compared to impact pile driving, and short duration of use. Therefore, Vineyard Wind did not request, and NMFS did not propose, to authorize taking associated with that activity. Although the source levels during vibratory impact driving are lower than during impact driving, the Level B harassment threshold for vibratory pile driving is much lower at 120 rather than 160 dB re 1 μ Pa. Thus, taking associated with vibratory pile driving cannot be, and historically has not been, discounted by NMFS. For other projects involving sound sources that would be used for short durations (including for only 30 or 45 minutes), applicants have requested, and NMFS has proposed to authorize, marine mammal takes². Moreover, those sound sources also emit sound at much lower source levels than would occur during vibratory installation of 3- or 10.3-m piles. For these reasons, the Commission recommends that NMFS (1) authorize takes of the various marine mammal species that could occur during vibratory pile driving and (2) require Vineyard Wind to

¹ PSO also would monitor the various clearance zones: 1,000 m for North Atlantic right whales, 500 m for all other mysticetes, 120 m for harbor porpoises, and 50 m for all other marine mammals.

² See for example 84 Fed. Reg. 23032, 84 Fed. Reg. 12356.

conduct and report sound source and sound propagation measurements during vibratory pile driving and adjust the Level A and B harassment zones, as needed.

Level A and B harassment zones and takes

Level A harassment zones—As the Commission has indicated in previous letters, it supports NMFS's use of the updated permanent threshold shift (PTS) thresholds and associated weighting functions to estimate the Level A harassment zones. However, there are some shortcomings that need to be addressed regarding the methodology for determining the extent of the Level A harassment zones based on the associated PTS cumulative SEL (SEL_{cum}) thresholds for the various types of sound sources, including stationary sound sources. For determining the range to the SEL_{cum} thresholds, NMFS uses a baseline accumulation period of 24 hours unless an activity would occur for less time (e.g., 8 hours). The Commission supports that approach *if* an action proponent is able to conduct more sophisticated sound propagation and animal modeling. However, that approach is less than ideal for action proponents that either are unable, or choose not, to conduct more sophisticated modeling.

As an example, the Level A harassment zone for low-frequency cetaceans was estimated to be greater than the Level B harassment zone during impact driving of the jacket piles (7,253 vs. 4,121 m, respectively)³. Based on the extent of those zones, it is assumed that an animal would experience PTS before responding behaviorally and leaving or avoiding the area. That notion runs counter to the logic that permanent and temporary physiological effects are expected to occur closest to the sound source, with behavioral responses triggered at lower received levels, and thus at farther distances. Specifically, the Level A and B harassment zones do not make sense biologically or acoustically due to NMFS's unrealistic assumption that the animals remain stationary throughout the entire day of the activity.⁴ By assuming a stationary receiver, all of the energy emitted during a 24-hour period is accumulated for the SEL_{cum} thresholds.

The Commission continues to believe that NMFS should consult with scientists and acousticians to determine the appropriate accumulation time that action proponents should use to determine the extent of the Level A harassment zones based on the associated SEL_{cum} thresholds in such situations. Those zones should incorporate more than a few hammer strikes (or acoustic pulses) but less than an entire workday's worth of strikes (or pulses). This recommendation is the same as that made in the Commission's [11 July 2017 letter](#) on NMFS's final Technical Guidance and numerous previous letters. Other federal partners, including the Navy, have made similar recommendations. Since the Commission and other federal partners have determined that this issue needs resolution, the Commission recommends that NMFS make this issue a *priority* to resolve in the near future. The Commission understands that NMFS formed an internal committee to address this issue but believes that external expertise also is needed to resolve it. Therefore, the Commission again recommends that NMFS consult with external scientists and acousticians to determine the appropriate accumulation time that action proponents should use to determine the extent of the Level A harassment zones based on the associated SEL_{cum} thresholds for the various types of sound

³ The Level A harassment zone also is greater than the Level B harassment zone for low-frequency cetaceans.

⁴ Which generally has been more of an issue for stationary sound sources. However, this also could be an issue for moving sound sources that have short distances between transect lines, in which the user spreadsheet may not be appropriate for use unless the source level could be adjusted accordingly.

sources, including stationary sound sources. Estimated swimming speeds of various species and behavior patterns (including residency patterns)⁵ should be considered. More specifically, animat modeling that considers various scenarios should be used to address this issue. This is especially important for ensuring that NMFS's assumptions regarding the appropriate accumulation time conform to real-world scenarios.

Appropriateness of the Level A harassment takes—A complicating factor for Vineyard Wind's proposed activities is that the Level A harassment zones appear to have been estimated based on the maximum amount of time pile driving would occur on a given day (i.e., 6 hours for installation of two monopiles). However, the Level A harassment takes were estimated based on animat modeling rather than static assumptions⁶. That is, the Level A harassment zones discussed in the previous section do not comport with the proposed numbers of Level A harassment takes.

As previously noted, the Level A harassment zone for jacket piles exceeds the Level B harassment zone for low-frequency cetaceans. For impact driving of monopiles, the Level A harassment zone is 3,191 m for low-frequency cetaceans, which equates to more than 77 percent of the extent of the 4,121-m Level B harassment zone. However, NMFS proposed to authorize only 4 Level A harassment and 33 Level B harassment takes for fin whales and 10 Level A harassment and 56 Level B harassment takes for humpback whales. Those proposed Level A harassment takes are less than 15 percent of the total takes to be authorized, which is illogical based on the extent of the Level A harassment zone⁷ relative to the Level B harassment zone. Consistent with other authorizations, Vineyard Wind would be required to report the numbers of marine mammals taken and the types of taking based on the extents of the Level A and B harassment zones (see section 5(b)(vii)(15) in the proposed authorization), which do not consider the amount of time spent in the Level A harassment zone but which informed the animat modeling. Thus, Vineyard Wind could easily exceed the numbers of Level A harassment takes to be authorized for low-frequency cetaceans during the pile-driving activities. The Commission recommends that NMFS reassess the numbers of Level A harassment takes for all low-frequency cetaceans and authorize an appropriate number of takes relative to the extents of the Level A and B harassment zones—the Level A harassment takes should account for 77 percent of the total takes for installation of monopiles and 100 percent of the total takes for jacket piles.

Appropriateness of the Level B harassment takes—Previous monitoring efforts for geophysical and geotechnical surveys have occurred in the waters of Rhode Island, near Vineyard Wind's study area and during the same timeframe that Vineyard Wind's proposed activities would occur. Those monitoring efforts indicated that 346 common dolphins and 6 humpback whales were taken by Level B harassment within just a 200-m harassment zone (Deepwater Wind 2018). Similarly, 607 common dolphins and 12 humpback whales were taken by Level B harassment within the 400-m

⁵ Results from monitoring reports, including animal responses, submitted in support of incidental harassment authorizations issued by NMFS also may inform this matter.

⁶ The animat dosimeters could have been queried to assess whether the Level A harassment zones accurately represented the distances at which Level A harassment was estimated to occur.

⁷ It also is not unusual for a mysticete to remain in the area of a stationary sound source for an extended period of time, particularly in areas where those whales are feeding and the extents of the zones are large.

harassment zone (Deepwater Wind 2018)⁸. Based on the extent of the Level B harassment zones for Deepwater Wind's activities and the numbers of species observed, it is apparent that Vineyard Wind's Level B harassment takes have been vastly underestimated, particularly given that the Level B harassment zones are orders of magnitude greater than Deepwater Wind's zones.

In addition, NMFS authorized much greater numbers of Level B harassment takes for Bay State Wind/Orsted for activities that would produce much smaller harassment zones (i.e., 400 m) and that would occur on fewer days of activities (i.e., 40 days). For example, NMFS authorized Bay State Wind/Orsted to take up to 1,000 common bottlenose dolphins, while Vineyard Wind would be authorized to take only 96 bottlenose dolphins. Similar trends are evident for Risso's dolphins, harbor porpoises, and gray and harbor seals that have been observed in the study area. To ensure that Vineyard Wind does not have to either delay or shut down its activities prematurely due to reaching the number of takes authorized for the various species, the Commission recommends that NMFS reassess the numbers of Level B harassment takes for all species and authorize an appropriate number of takes relative to the extent of the Level B harassment zones, each species' occurrence in the project area⁹, and the 102 days that activities are proposed to occur. NMFS took this same approach and increased the numbers of model-estimated takes for Bay State Wind/Orsted's incidental harassment authorization (83 Fed. Reg. 36552). The Commission expects that it can do so again for Vineyard Wind.

Efficacy of sound attenuation devices

Vineyard Wind based its Level A and B harassment take estimates on an assumed 6-dB reduction in sound levels from the use of one or more of the following: a noise mitigation system, a hydro-sound damper, a noise abatement system, or a bubble curtain. Vineyard Wind would be required to achieve at least a 6-dB reduction in sound levels as verified by sound measurements obtained at the beginning of pile-driving activities. A second back-up attenuation device would be available, if needed, to ensure that Vineyard Wind achieves the required 6-dB reduction in pile-driving sound.

The Commission has raised concerns repeatedly about the assumptions used by NMFS regarding the efficacy of bubble curtains in reducing sound levels associated with pile driving¹⁰ and believes those concerns are still valid. Although Vineyard Wind would be required to achieve at least a 6-dB reduction in sound levels, it also would be allowed to continue pile driving until the sound source data have been processed and analyzed, which NMFS estimated could take a week or more. Further, NMFS did not propose to require Vineyard Wind to conduct in-situ measurements during the remaining 100 days of activities to ensure that the sound attenuation device continues to operate as intended. Regular monitoring of sound levels has been a requirement in Europe during pile-driving operations involving similar-sized piles and should have been a requirement for Vineyard Wind, particularly given that 3- and 10.3-m piles have not been installed and the various sound attenuation devices have yet to be used in the United States. Based on these concerns, the

⁸ In general, Deepwater Wind (2018) observed 2,677 common dolphins and 144 humpback whales during the approximate 85 days of activities. Those observations would have been made well within the range of Vineyard Wind's Level B harassment zones.

⁹ Considering monitoring efforts for other renewable energy activities.

¹⁰ Please review the Commission's [14 May 2019 letter](#) in conjunction with this letter.

Commission recommends that NMFS require Vineyard Wind to (1) submit the results of the sound source measurements taken during installation of the first monopile for which sound attenuation devices are used and adjust the Level A and B harassment zones accordingly *prior to* proceeding with installation of any additional monopiles and (2) conduct sound source measurements at least monthly to ensure that the sound attenuation device continues to provide at least a 6-dB reduction in sound levels.

Passive acoustic monitoring and North Atlantic right whale protections

Vineyard Wind would be required to conduct passive acoustic monitoring to detect North Atlantic right whales within a 10-km clearance zone from 1 May to 14 May and 1 November to 31 December. NMFS would not require Vineyard Wind to conduct passive acoustic monitoring from 15 May to 31 October. However, NMFS indicated that North Atlantic right whales were detected nearly continuously by passive acoustic monitoring in the species' habitat range (including the Vineyard Wind project site)¹¹ (Davis et al. 2017). It is also unclear why NMFS has not included a requirement for year-round passive acoustic monitoring given the clearance zone would be only 1 km during that timeframe and the Level A and B harassment zones extend from 3 to more than 7 km—distances that cannot be effectively observed visually. In addition, Vineyard Wind would be allowed to continue pile driving¹² during nighttime hours¹³. The only way to observe marine mammals during nighttime hours is via passive acoustic monitoring.

NMFS did not propose to authorize Level A harassment takes of North Atlantic right whales. Thus, if a North Atlantic right whale occurred within the Level A harassment zone and Vineyard Wind did not shut down its activities, it would be in violation of its authorization. For these reasons, the Commission recommends that NMFS require Vineyard Wind to conduct passive acoustic monitoring at *all* times during which pile-driving activities occur and implement the necessary shut downs when North Atlantic right whales are detected within the Level A harassment zones.

Proposed authorization requirements

NMFS omitted several standard requirements in its proposed incidental harassment authorization. Those include failing to require Vineyard Wind to—

- cease activities if any marine mammal comes within 10 m¹⁴ of the equipment, particularly during pile placement;
- implement delay and shut-down procedures, if a species for which authorization has not been granted or if a species for which authorization has been granted but the authorized takes are met, approaches or is observed within the Level A and/or B harassment zone; and
- extrapolate the total number of marine mammals taken based on the distance to which visual observations can be made accurately and the extents of the Level A and B harassment zones.

¹¹ Although detections declined from August through October, right whales were still present during those months.

¹² But not *initiate* pile driving at night.

¹³ Based on concerns for human safety or ensuring the feasibility of installation.

¹⁴ This distance should be increased based on the sizes (considering length and width) of the piles proposed for use by Vineyard Wind, as this requirement is intended to minimize the risk of physical impacts on marine mammals.

The Commission recommends that NMFS include the above-stated requirements in the final incidental harassment authorization.

Proposed one-year authorization renewals

NMFS has indicated that it may issue a second one-year¹⁵ 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 (see 84 Fed. Reg. 18381 and the proposed authorization for details). The Commission agrees that NMFS should take appropriate steps to streamline the authorization process under section 101(a)(5)(D) of the MMPA to the extent possible. However, the Commission is concerned that the renewal process proposed in the *Federal Register* notice is inconsistent with the statutory requirements—section 101(a)(5)(D)(iii) clearly states that proposed authorizations are subject to a 30-day comment period¹⁶.

Another potentially significant issue with the proposed 15-day comment period is the burden that it places on reviewers, who will need to review the original authorization and supporting documentation¹⁷, the draft monitoring report(s), the renewal application or request¹⁸, and the proposed authorization and then formulate comments very quickly. Depending on how frequently NMFS invokes the renewal option, how much the proposed renewal or the information on which it is based deviates from the original authorization, and how complicated the activities and the taking authorization are, those who try to comment on all proposed authorizations and renewals, such as the Commission, would be hard pressed to do so within the proposed 15-day comment period. Therefore, the Commission recommends that NMFS refrain from using the proposed renewal process for Vineyard Wind's authorization. The renewal process should be used sparingly and selectively, by limiting its use only to those proposed incidental harassment authorizations that are expected to have the lowest levels of impacts to marine mammals and that require the least complex analyses. Notices for other types of activities, including Vineyard Wind's pile-driving activities, should not even include the possibility that a renewal might be issued using the proposed foreshortened 15-day comment period. If NMFS intends to use the renewal process frequently *or* for authorizations that require a more complex review or for which much new information has been generated (e.g., multiple or extensive monitoring reports), the Commission recommends that NMFS provide the Commission and other reviewers the full 30-day comment opportunity set forth in section 101(a)(5)(D)(iii) of the MMPA.

¹⁵ NMFS informed the Commission that the renewal would be issued as a one-time opportunity, after which time a new authorization application would be required. NMFS has yet to specify this in any *Federal Register* notice detailing the new proposed renewal process but should do so.

¹⁶ See also the legislative history of section 101(a)(5)(D), which states "...in some instances, a request will be made for an authorization identical to one issued the previous year. In such circumstances, the Committee expects the Secretary to act expeditiously in complying with the notice and comment requirements." (H.R. Rep. No. 439, 103d Cong., 2d Sess. 29 (1994)). The referenced "notice and comment requirements" specify a 30-day comment period.

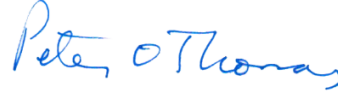
¹⁷ Including the original application, hydroacoustic and marine mammal monitoring plans, take estimation spreadsheets, etc.

¹⁸ Including any proposed changes or any new information.

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

Sincerely,



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

References

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