15 April 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 application submitted by Virginia Electric and Power Company, d/b/a Dominion Energy Virginia (Dominion) under section 101(a)(5)(D) of the Marine Mammal Protection Act (the MMPA). Dominion is seeking authorization to take small numbers of marine mammals by harassment incidental to installation of two wind turbine generator foundations off the coast of Virginia during a one-year period. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 16 March 2020 notice (85 Fed. Reg. 14901) requesting comments on its proposal to issue the authorization, subject to certain conditions.

Dominion would install two monopiles with a diameter up to 7.8 m using an impact hammer. Pile-driving activities would occur on two days in 25 m of water approximately 43 km from shore.

NMFS preliminarily has determined that, at most, the proposed activities could cause Level B harassment of small numbers of seven marine mammal species. NMFS anticipates that any impact on the affected species and stocks would be negligible. NMFS also 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—

- requiring all pile-driving activities to occur between 1 May and 31 October to minimize the potential to harass North Atlantic right whales;
- using a sound attenuation device (i.e., a double bubble curtain) during impact driving of one of the piles[1] and implementing various measures regarding performance standards;
- ceasing operations if a marine mammal comes within 10 m of heavy machinery during in-water construction activities (other than pile driving)[2];
- using standard pre-clearance, soft-start, delay, and shut-down procedures;

[1] The second pile would be installed using no attenuation in order to gather hydroacoustic data on the effectiveness of the sound attenuation device.
[2] This requirement was included in section 4(a) of the draft incidental harassment authorization but not in the preamble.

- requiring at least two protected species observers (PSOs) to monitor the Level A and B harassment zones at each site for 30 minutes before, during, and for 30 minutes after all pile-driving activities;
- using delay and shut-down procedures if a species for which taking has not been authorized, or for which authorized numbers of takes have been met, approaches or is observed within the Level B harassment zone[3];
- conducting hydroacoustic monitoring of all pile-driving activities[1,4];
- using standard vessel strike avoidance procedures during all in-water activities;
- reporting all sightings of North Atlantic right whales immediately to the NMFS North Atlantic Right Whale Sighting Advisory System[5];
- reporting injured and dead marine mammals to the Office of Protected Resources and the Mid-Atlantic Regional Stranding Coordinator and ceasing activities only if the injury or death was a result of vessel strike[6]; and
- submitting a draft and final acoustic and marine mammal monitoring report[7] to NMFS, including all PSO datasheets and/or raw sightings data[8].

In addition, Dominion would conduct high-resolution geophysical (HRG) surveys and cable-laying activities. However, NMFS indicated that harassment of marine mammals during those activities would be so low as to be discountable[9], consistent with the Commission's previous recommendations, and did not consider the activities further. NMFS should implement the same approach for other similar HRG surveys and sources.

Take estimates

NMFS would require Dominion to operate only from 1 May to 31 October in order to minimize the potential for North Atlantic right whales to be exposed to pile-driving sound. It would also require pile-driving activities to be shut down if right whales were observed at any distance. As such, NMFS did not propose to authorize Level B harassment takes of right whales. The Commission agrees that the likelihood of taking a right whale or most other large baleen whales during Dominion's proposed activities would be minimized by the seasonal restriction. However, there are sightings and strandings of humpback whales in the mid-Atlantic in summer (Wiley et al. 1995, Barco et al. 2002, Aschettino et al. 2019, Costidis et al. 2019) suggesting year-round, low-level occurrence off Virginia. To minimize the likelihood that Dominion will have to shut down its

[3] This was included as a requirement in section 4(j) of the draft authorization but not in the preamble.
[4] This was included as a requirement in section 5(c) of the draft authorization but not in the preamble.
[5] This was included as a requirement in section 6(b)(i) of the draft authorization but not in the preamble.
[6] This was included as a requirement in section 6(c)(ii) of the draft authorization but not in the preamble.
[7] NMFS included the requirement that Dominion extrapolate and report the estimated number of Level B harassment takes based on the number of observed takes within the Level B harassment zone and the percentage of the Level B harassment zone that was not visible in the preamble (85 Fed. Reg. 14921) but did not include it in section 6(a) of the draft authorization. NMFS must specify this reporting requirement in section 6(a) of the final authorization.
[8] This was included in the preamble (85 Fed. Reg. 14921) but not in section 6(a) of the draft authorization. NMFS must specify this reporting requirement in section 6(a) of the final authorization.
[9] NMFS noted in the preamble (85 Fed. Reg. 14903) that the parametric subbottom profiler was discounted based on a narrow beam of 1°. The parametric subbottom profiler has a 2° beam, as indicated in Table 2-2 of Dominion's application, which is considered discountable as well.

activities if a humpback whale occurs in the Level A[10] or B harassment zone, the Commission recommends that NMFS include at least one take of humpback whales by Level A harassment for each of the two days of pile-driving activities (i.e., two Level A harassment takes).

The Commission also is concerned that Level B harassment takes of common and bottlenose dolphins have been underestimated. Dominion estimated only one Level B harassment take of common dolphins, which NMFS revised to two and then adjusted to 39 to account for group size. The Commission agrees that the estimated takes of common dolphins should be adjusted to account for group size. However, common dolphins could occur on either of the days when pile-driving activities would occur. In addition, Dominion's previous monitoring report indicated that 240 bottlenose dolphins were observed on a given day in the project area, with up to 100 animals in a single group (Milne 2018). NMFS proposed to authorize only 34 Level B harassment takes, which is not consistent with sightings from previous monitoring efforts. Therefore, the Commission recommends that NMFS increase the Level B harassment takes of (1) common dolphins from 39 to 78 and (2) bottlenose dolphins from 34 to 200[11] based on the potential to take both species on both days of pile driving.

Appropriate accumulation time for Level A harassment zones

As the Commission has indicated in previous letters, some shortcomings need to be addressed regarding the method NMFS uses for determining the extent of the Level A harassment zones based on the cumulative sound exposure level (SEL_{cum}) thresholds for the various types of sound sources, including stationary sound sources[12]. 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). In instances when action proponents either are unable or choose not to conduct more sophisticated modeling[13], the receiver is assumed to be stationary and all of the energy emitted during that period is accumulated for the SEL_{cum} thresholds. For Dominion's activities, that assumption results in the Level A harassment zones for low-frequency (LF) cetaceans being greater than the Level B harassment zones during unattenuated and attenuated pile driving. Based on the extent of those zones, it is assumed that an animal would experience permanent threshold shift (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.

The Commission understands that NMFS has formed an internal committee to address this issue and is consulting with external acousticians and modelers as well. In the absence of relevant recovery time data for marine mammals, the Commission continues to believe that animat modeling that considers various operational and animal scenarios should be used to inform the appropriate accumulation time and could be incorporated into NMFS's user spreadsheet that currently estimates

[10] The Level A harassment zones are larger than the Level B harassment zones for low-frequency (LF) cetaceans, see Table 4 in the *Federal Register* notice. If a whale is observed within the Level A harassment zone, it would be enumerated as a Level A harassment take regardless of how long it was within the zone, consistent with NMFS's long-standing guidance.
[11] Based on a group size of 100.
[12] However, this also could be an issue for moving sound sources with short distances between transect lines.
[13] Animat modeling.

the Level A harassment zones. The Commission recommends that NMFS continue to make this issue a *priority* to resolve in the near future and consider incorporating animat modeling into its user spreadsheet.

Mitigation, monitoring, and reporting requirements

Sound attenuation device—NMFS indicated that a double bubble curtain would be used for sound attenuation during pile driving in the preamble (85 Fed. Reg. 14919), but the requirement that Dominion use a *double* bubble curtain was not specified in section 4(l) of the draft authorization. The Commission recommends that NMFS specify in section 4(l) of the final authorization that a double bubble curtain must be used.

Exclusion and monitoring zones—NMFS did not propose to authorize Level A harassment takes of any species. Instead, NMFS proposed that Dominion implement an exclusion zone of 1,750 m for all marine mammals[14]. That zone does not encompass the full extents of the Level A harassment zones based on SEL_{cum} for LF cetaceans during unattenuated or attenuated pile driving, or for high-frequency (HF) cetaceans during unattenuated pile driving[15]. Although NMFS's Level A harassment thresholds are based on dual metrics of SEL_{cum} and peak sound pressure level (SPL_{peak}), NMFS's long-standing guidance has been and continues to be to use whichever metric results in the largest isopleth for estimating Level A harassment (Table 2; 85 Fed. Reg. 14914). However, rather than following its own guidance in this instance, NMFS attempted to justify Dominion's reduced exclusion zone of 1,750 m based on the fact that it is significantly larger than the modeled distances to the Level A harassment zones based on SPL_{peak}. NMFS did not acknowledge that the Level A harassment zones are to be based on the SEL_{cum} thresholds because those yield the larger of the two zones, or that Level A harassment zones based on the SEL_{cum} extend well beyond 1,750 m. NMFS's approach for Dominion's proposed authorization is inconsistent with other authorizations, including two other recent ones involving construction activities with very large Level A harassment zones in the Chesapeake Bay area[16]. Additionally, the exclusion zones for mid-frequency (MF) cetaceans during unattenuated and attenuated pile driving should be reduced to reflect the SEL_{cum} thresholds indicated in Table 4 of the *Federal Register* notice to avoid unnecessary shutdowns and delay of activities. As such, the Commission recommends that NMFS revise the exclusion zones in Table 2 of the final authorization to reflect the actual distances to the Level A harassment thresholds based on SEL_{cum} for LF[17] and MF cetaceans during unattenuated and attenuated pile driving and for HF cetaceans during unattenuated pile driving, as specified in Table 4 of the *Federal Register* notice. See the recommended revisions to the exclusion zones in Table 1 herein.

[14] Except North Atlantic right whales, for which a sighting at any distance would trigger a shutdown or delay in activities.
[15] See Table 4; 85 Fed. Reg. 14915.
[16] See 85 Fed. Reg. 16072 for Chesapeake Tunnel Joint Venture's activities and requirement 4(e) in the final authorization (https://www.fisheries.noaa.gov/webdam/download/104970969). See also 85 Fed. Reg. 16221 and Table 11 for Hampton Roads Connector Partners' activities and requirement 4(b) in the draft authorization (https://www.fisheries.noaa.gov/webdam/download/105007574).
[17] Except for humpback whales. Based on the Commission's recommendation herein, NMFS should be authorizing Level A harassment takes of humpback whales to minimize any unnecessary shut downs. As such, a reduced exclusion zone of 500 m should be implemented.

Similarly, the monitoring zone identified in the *Federal Register* notice and Table 2 of the draft authorization is based only on the distance to the Level B harassment threshold for attenuated pile driving. NMFS should have specified monitoring zones based on both unattenuated and attenuated pile driving. The Commission recommends that NMFS include in Table 2 of the final authorization the monitoring zone associated with unattenuated pile driving, as specified in Table 4 of the *Federal Register* notice. The recommended revisions to the monitoring zones are included in Table 1 as well.

Table 1: Exclusion and monitoring zones for all functional hearing groups, for unattenuated and attenuated pile driving.

Species	Exclusion Zone		Monitoring Zone	
	No Attenuation	6 dB Reduction	No Attenuation	6 dB Reduction
North Atlantic right whales	Any distance but not less than 5,930 m	Any distance but not less than 3,830 m	N/A[1]	N/A[1]
Humpback whales	500 m	500 m	5,930 m[2]	3,830 m[2]
Other LF cetaceans	5,930 m	3,830 m	N/A	N/A
MF cetaceans	400 m	260 m	5,175 m	3,580 m
HF cetaceans	2,670 m	1,750 m		
Phocids	1,750 m	1,750 m		

[1] Because the Level A harassment zone exceeds the Level B harassment zone, only an exclusion zone is relevant. A monitoring zone does not exist.
[2] Because the Level A harassment zones exceed the Level B harassment zones and the Commission recommended that NMFS authorize Level A harassment takes of humpback whales, the monitoring zones are based on the Level A harassment zones.

Hydroacoustic monitoring—NMFS indicated that hydroacoustic monitoring would be supported by the Bureau of Ocean Energy Management (BOEM) to determine the efficacy of the sound attenuation device (85 Fed. Reg. 14919). Although not specified as a requirement in the preamble, the requirement to conduct hydroacoustic monitoring and provide a report was included in section 5(c) of the draft authorization. In this case, Dominion has proposed to deploy a double bubble curtain as the sound attenuation device. Considering the large diameter of the piles to be installed, the lack of information regarding sound levels associated with installation of such piles in U.S. waters with and without sound attenuation, and the lack of validation of Dominion's sound propagation model (dBSea), hydroacoustic monitoring must occur, consistent with other proposed authorizations involving installation of wind energy turbine foundations[18]. If for any reason, BOEM is unable to conduct the hydroacoustic monitoring, Dominion must do so. The Commission recommends that NMFS (1) include in section 5(c) of the final authorization that hydroacoustic monitoring must be conducted and (2) require Dominion's hydroacoustic monitoring report to include, along with the information specified in section 5(c) of the final authorization[19], the spatial configuration of the first and second bubble curtains relative to the pile, whether and when the double bubble curtain is

[18] See NMFS's requirements that Vineyard Wind conduct and report on hydroacoustic monitoring of pile-driving activities associated with the construction of its wind farm off Massachusetts in its preamble (84 Fed. Reg. 18376) and section 5(c)(ii) and (iii) of the draft authorization (https://www.fisheries.noaa.gov/webdam/download/90191501).
[19] Section 5(c)(iii) of the draft authorization specified that 'medium' sound levels should be reported; that should be changed to 'median' for the final authorization.

active, and the extents of the Level A and B harassment zones for both unattenuated and attenuated pile driving. The latter is necessary for confirming the extents of the zones and accurately extrapolating observed takes to total takes.

Daylight hours—Although NMFS indicated in the *Federal Register* notice and draft authorization that pile-driving activities must commence during daylight hours[20], it would allow pile driving to continue into the night for human safety or installation feasibility reasons[21]. Effective implementation of mitigation measures is contingent on the ability of the PSOs to observe the entirety of the exclusion zones, particularly in the absence of passive acoustic monitoring for marine mammal presence. In this instance, Dominion estimated that pile driving would take at most 2 hours[22]. As such, it is practicable that Dominion install both piles during daylight hours only. To ensure that Dominion is effecting the least practicable adverse impact on the affected species and stock, the Commission recommends that NMFS, in the final authorization (1) require Dominion to initiate pile driving early enough in the day to ensure that pile driving is completed before sunset and (2) remove measure 4(i) that allows for pile driving to continue into nighttime hours.

Tally of takes—Although it is unclear from both the preamble and the draft authorization whether Dominion will be keeping a running tally of the total Level B harassment takes, including observed and extrapolated takes, it is imperative that Dominion do so to ensure the takes are within the authorized limits and the authorized numbers of takes are not exceeded, particularly if NMFS does not increase the numbers of takes as recommended, and to implement effectively requirement 4(j) of the draft authorization. The Commission recommends that NMFS ensure Dominion keeps a running tally of the total takes, based on observed and extrapolated takes, for Level A and B harassment.

Unauthorized taking— As noted for other recent authorizations[23], NMFS has relaxed and effectively diminished the reporting measures when unauthorized taking (i.e., an injury or death attributed to Dominion's pile-driving activities) occurs. Dominion's authorization would require that it only report the unauthorized taking during *pile-driving activities* and would require Dominion to cease its activities only in the event of a *vessel strike*. When unauthorized taking occurs, no matter if during pile-driving activities or if a vessel inadvertently strikes an animal, action proponents should cease the associated activities until NMFS determines what additional measures are necessary to minimize additional injuries or deaths. To that end, the authorizations must include clear, concise, explicit measures to minimize any ambiguity regarding what action proponents should do in those circumstances. The Commission recommends that NMFS include in all draft and final incidental harassment authorizations the explicit requirements to cease activities if a marine mammal is injured or killed, *both* during the proposed activities *and* in the event of a vessel strike, *until* NMFS reviews the circumstances involving any injury or death that is likely attributable to the activities *and* determines what additional measures are necessary to minimize additional injuries or deaths.

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[20] At least 30 minutes before sunset.
[21] Installation feasibility refers to ensuring that the pile installation results in a usable foundation for the wind turbine generator (*e.g.*, installed to the target penetration depth without refusal and with a horizontal foundation/tower interface flange).
[22] Based on a maximum of 4,819 strikes/pile and an installation rate of 40 strikes/minute (85 Fed. Reg. 14904).
[23] See the Commission's 10 February 2020 letter for a more extensive rationale regarding this matter.

Proposed one-year authorization renewals

The Commission has ongoing concerns regarding NMFS's renewal process, which can be reviewed in its 10 February 2020 letter. Based on those concerns, the Commission again recommends that NMFS refrain from issuing renewals for any authorization and instead use its abbreviated *Federal Register* notice process, which is similarly expeditious and fulfills NMFS's intent to maximize efficiencies. If NMFS continues to propose 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. Despite the MMPA section 202(d) requirement that NMFS must provide separate, detailed explanations for not following the Commission's recommendations, NMFS has yet to respond directly to this recommendation which has been included in numerous Commission letters over several months.

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

Sincerely,

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

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