



# MARINE MAMMAL COMMISSION

13 March 2023

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 National Marine Fisheries Service's (NMFS) 10 February 2023 notice (88 Fed. Reg. 8896) and the letter of authorization (LOA) application submitted by Sunrise Wind, LLC (Sunrise Wind) seeking promulgation of regulations under section 101(a)(5)(A) of the Marine Mammal Protection Act (the MMPA). Taking of marine mammals would be incidental to construction of the Sunrise Wind offshore wind energy facility and other associated activities. Sunrise Wind's windfarm area is located approximately 30 km south of Martha's Vineyard, Massachusetts, and 48 km east of Montauk, New York<sup>1</sup>.

## Background

Sunrise Wind is proposing to conduct (1) impact pile driving to install 94<sup>2</sup> tapered 7/12-m monopiles to support wind turbine generators (WTGs) and 8 4-m pin piles to support an offshore converter station (OCS), (2) impact pile driving and removal<sup>3</sup> of a single temporary casing pipe and vibratory pile driving and removal of up to 22 sheet piles and 6 goal posts to assist in the installation of the export cable route, (3) detonation of up to 3 unexploded ordnances or munitions and explosives of concern (UXOs), as needed, with charges weighing up to 454 kg, and (4) high-resolution geophysical (HRG) site characterization surveys of the inter-array cable and export cable construction areas.

Sunrise Wind would install the WTG monopiles and OCS pin piles using an impact hammer on up to 53 days in water depths of 35 to 62 m<sup>4</sup>. Sunrise Wind identified five different pile-driving scenarios for monopiles and pin piles that involve: (1) installing two monopiles or four pin piles consecutively each day for 53 days, (2) installing three monopiles or four pin piles consecutively each day for 36 days, (3) installing four monopiles concurrently each day using two different installation vessels located in close proximity for 25.5 days, plus four pin piles installed consecutively each day

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<sup>1</sup> In the Bureau of Ocean Energy Management (BOEM) lease area OCS-A 0487, within the Rhode Island-Massachusetts Wind Energy Area (WEA).

<sup>2</sup> Although only 94 WTGs are proposed to be installed, modeling to estimate Level A and B harassment takes was based on the installation of 102 WTGs, which accounts for up to 8 piles that may have to be reinstalled at different locations.

<sup>3</sup> Termed pneumatic hammering in the *Federal Register* notice.

<sup>4</sup> These are the water depths in the overall lease area. Neither the applicant nor NMFS specified the water depths where pile driving of monopiles and pin piles or UXO detonations could occur, similar to other recent proposed rules.

for 2 days (27.5 days total), (4) installing four monopiles concurrently each day using two different installation vessels located at long distances from each other for 25.5 days, plus four pin piles installed consecutively each day for 2 days (27.5 days total), and (5) installing two monopiles and four pin piles concurrently per day for two days using two different installation vessels, followed by two monopiles installed consecutively each day for 49 days (51 days total).

Sunrise Wind also would use impact pile driving for installation and removal of the casing pipe on up to 4 days and vibratory pile driving for installation and removal of sheet piles on up to 12 days; both would occur in water depths of approximately 5.7 m. No more than one UXO detonation would occur each day, for a maximum of 3 days, in water depths of up to 67 m. In addition, Sunrise Wind would use shallow- and medium-penetration sub-bottom profilers (including chirps, sparkers, and boomers), ultra-short baseline positioning equipment, multibeam echosounders, side-scan sonar, and marine magnetometers for up to 622 vessel days during its HRG surveys in water depths ranging from 2 m to 55 m. Mitigation measures would include seasonal restrictions, sound attenuation system usage and minimum operating requirements, visual and passive acoustic monitoring to implement clearance, delay and shut-down procedures, sound field verification (SFV) with mitigation and monitoring zone adjustments and additions to sound attenuation systems as needed, soft-start and ramp-up procedures, and various vessel strike avoidance measures.

### **Wind energy proposed rules in general**

The Commission's review of NMFS's *Federal Register* notice and associated Sunrise Wind documents revealed numerous issues of concern. Many of the same or similar issues were discussed in the Commission's [13 January 2023 letter](#) regarding the request by Revolution Wind, LLC (Revolution Wind) to install monopiles off Rhode Island and its [6 December 2022 letter](#) regarding the request by Ocean Wind, LLC (Ocean Wind) to install monopiles off New Jersey<sup>5</sup>. Since final rules have yet to be issued for Revolution Wind or Ocean Wind, it is unclear whether and how NMFS plans to address the issues raised by the Commission in those previous letters. Rather than reiterating much of the same rationale and justification, the Commission's previous letters should be reviewed in concert with this letter. The ongoing issues as they relate to the Sunrise Wind proposed rule are summarized herein.

### **Level A and B harassment zones and numbers of takes**

The Commission notes the following deficiencies regarding estimation of the Level A and B harassment zones<sup>6</sup> and associated numbers of marine mammal takes—

- Lack of validation of JASCO Applied Sciences Inc.'s (JASCO) pile driving source model, sound propagation model, and presumed 10-dB sound attenuation reduction for installation of monopiles along the Atlantic coast. If the Level A and B harassment zones were underestimated based on the various reasons stipulated in previous Commission letters, then the Level A and B harassment takes would be underestimated as well.

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<sup>5</sup> See also the [1 March 2021 letter](#) regarding the request by South Fork Wind, LLC's to install monopiles off Rhode Island.

<sup>6</sup> Based on radial distances from the pile.

- Underestimating and mischaracterizing the numbers of model-estimated Level A and B harassment takes based on errors in take tables<sup>7</sup> and in NMFS's description of trends in takes<sup>8</sup>.
- Using the smallest Level A harassment zones of the four scenarios modeled<sup>9</sup> for monopile installation to inform the mitigation zones, and to support reducing the total number of model-estimated Level A harassment takes for impact pile driving by up to 80 percent for several species<sup>10</sup> and to zero for North Atlantic right whales. In addition, those take reductions were based on the assumed efficacy of the proposed mitigation measures for impact pile driving<sup>11</sup>, which has yet to be verified. Similarly, model-estimated Level A harassment takes associated with UXO detonations were reduced to zero for all mysticetes and common dolphins, again based on the assumed efficacy of proposed mitigation measures that are not routinely employed.
- Asserting that take estimates associated with impact pile driving were conservative, when in fact Level B harassment takes would be vastly underestimated if only one monopile or fewer than four pin piles were ultimately installed per day.
- Omitting Level B harassment behavior takes that have the potential to occur during UXO detonations.
- Not accounting for group size when reducing the Level A harassment takes associated with impact pile driving for certain species (i.e., harbor porpoises and gray seals).<sup>12</sup>

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<sup>7</sup> As one example of underestimating the numbers, numerous Level A and B take estimates were greater in JASCO's acoustic and exposure modeling report (e.g., Tables 1-3 and 1-4) than in the summary table in Sunrise Wind's LOA application (Table 22). JASCO did not provide the raw take estimates for scenarios 1 and 2 in its density and take estimate addendum, so a similar comparison cannot be made. However, NMFS indicated that the greatest number of model-estimated Level B harassment takes for monopile installation was 449.8 for gray seals and 1,242.1 for harbor seals in Table 21 of the *Federal Register* notice, whereas in Table 19 it specified the takes to be 453.9 for gray seals and 1,261.7 for harbor seals.

<sup>8</sup> NMFS indicated that scenario 2 resulted in the greatest number of Level B harassment takes (88 Fed. Reg. 9043), when as one example, scenarios 4 and 5 resulted in greater numbers of takes (see Tables 19 and 20 in the *Federal Register* notice). NMFS also indicated that there were no sound exposure level (SEL) injury exposures at any attenuation level for any construction schedule (88 Fed. Reg. 9043), when in fact model-estimated Level A harassment takes were stipulated for the majority of the species (see Tables 19 and 20). In addition, NMFS indicated that the Level A harassment metric was cumulative sound pressure level (SPL<sub>cum</sub>) rather than SEL<sub>cum</sub> in Tables 19–21 of the notice. NMFS does not use an SPL<sub>cum</sub> metric, but the term was introduced in JASCO's density and take estimate addendum in error.

<sup>9</sup> For example, 3.68 km was specified as the Level A harassment zone for fin whales in summer (Table 40 of the *Federal Register* notice). That zone is the smallest of the four Level A harassment zones for just monopile installation in Tables 15 and 16 of the notice, the largest of which was 4.23 m. The scenario involving WTG and pin piles yielded even larger zones (5.25 km for fin whales in summer). All of the Level A harassment zones for mysticetes in winter and summer as specified in Table 40 are underestimated based on Tables 15 and 16—those underestimations also led to smaller clearance and shut-down zones in Table 40 of the preamble.

<sup>10</sup> Including fin, humpback, minke, and sei whales, harbor porpoises, and harbor seals.

<sup>11</sup> Such as the presumed 10-dB sound attenuation reduction and the ability to detect marine mammals in the very large harassment zones with only two observing platforms available to implement the required shutdowns and delays and maximum observer coverage of 30 percent for the 3.7-km clearance zone specified in Table 40 of the *Federal Register* notice. Sunrise Wind's presumed 80-percent observer coverage does not account for only two observing platforms with discrete observation areas, it presumes that only the outer 500-m of the 3.7-m zone would be unobservable to protected species observers (PSOs) deployed on the single transitory, vessel-based platform (88 Fed. Reg. 9044).

<sup>12</sup> Several marine mammal surveys have been conducted in the Rhode Island-Massachusetts WEA in recent years (see <https://www.masscec.com/resources/marine-mammal-and-sea-turtle-surveys>), and the average group sizes from those surveys should be used to update group size estimates in general for all marine mammals expected to occur in the Sunrise Wind project area and other wind farm projects being proposed for the Rhode Island-Massachusetts WEA.

- Not providing public access to references used in NMFS's analyses. For example, observational data from PSOs deployed on HRG surveys conducted in the Sunrise Wind lease area, and used to determine the average number of individuals of each species observed per vessel day, were not made available on the NMFS website, and instead were made available only upon request.

As indicated in the Commission's previous letters, if JASCO's model(s) is inaccurate and NMFS makes additional assumptions that result in the authorization of inadequate numbers of marine mammal takes, it will have repercussions across the wind energy industry and could cause unnecessary delays, increase construction costs, and prevent wind energy operators from meeting their construction milestones and adhering to their tight schedules. Further, given the scarcity of available installation vessels and appropriately-sized hammers for certain pile sizes in the United States, delays for a single project could ripple through the industry. So as not to hamper wind energy installation progress, the Commission recommends that for the final rule NMFS—

- re-estimate the various Level A and B harassment zones based on at least a 3-dB higher source level for monopile and pin pile installation than currently used;
- re-estimate and authorize Level A harassment takes based on modeling results for the worst-case scenario rather than presuming an arbitrary 80- or 100-percent reduction for mitigation efficacy and/or a 10-dB sound attenuation for impact pile driving;
- re-estimate and authorize Level B harassment takes based on more conservative assumptions for the pile-driving scenarios that could occur (including only one monopile or fewer than four pin piles installed per day); and
- re-estimate the various mortality, Level A harassment, and Level B harassment zones and numbers of takes based on 0-dB of sound attenuation for UXO detonations and authorize Level A and B harassment takes, including behavior takes, that could result from UXO detonations; and
- increase any Level A or B harassment takes to mean group size (including updates that reflect the results of more recent marine mammal surveys in the Rhode Island-Massachusetts WEA).

The Commission also recommends that NMFS ensure that all underlying documentation used in the agency's analyses, including PSO reports, are publicly available on its website prior to publishing any *Federal Register* notice for advance notice of proposed rulemakings or the proposed rules themselves.

### ***In-situ* sound measurements**

NMFS would require that *in-situ* sound measurements be conducted for the first three piles and for each UXO detonation to validate the model-estimated harassment zones (sections 217.314 (c)(3)(i) and (e)(5)(i) in the proposed rule, respectively). However, Sunrise Wind has yet to provide an SFV plan and NMFS has yet to specify how those measurements should be conducted, how many hydrophones must be deployed, whether pressure transducers should be deployed for UXO detonations, or the full repertoire of information necessary for SFV reports, including for measuring wind turbine operational sound. The Commission recommends that in the final rule NMFS (1) specify which model-estimated zones (i.e., acoustic ranges, exposure ranges, mitigation zones,

monitoring zones<sup>13</sup>) and which metrics (i.e., flat  $R_{max}$ , flat  $R_{95\%}$ ) should be compared to the *in-situ* measured Level A and B harassment zones, (2) specify which type of *in-situ* Level A harassment zone (i.e., acoustic or exposure ranges<sup>14</sup>) should be calculated, (3) require Sunrise Wind to conduct additional *in-situ* measurements for monopiles that are not represented by the previous three locations (i.e., substrate composition, water depth) *or* by the hammer energies and numbers of strikes needed to install a pile in a given day or number of piles installed in a given day, and (4) require Sunrise Wind to deploy a minimum of three hydrophones for SFV during impact pile driving of monopiles and two hydrophones and one pressure transducer for SFV during UXO detonations. In addition, the Commission recommends that NMFS require Sunrise Wind to—

- determine (1) root-mean-square SPL ( $SPL_{rms}$ ) and single-strike SEL ( $SEL_{s-s}$ ) source levels and (2) ranges to Level B harassment thresholds based on behavior for impact pile driving in section 217.314 (c)(3)(i) of the final rule;
- determine (1)  $SEL_{s-s}$  and impulse (in Pa-sec) source levels and (2) ranges to (a) mortality, (b) Level A harassment based on slight lung injury, slight gastro-intestinal (GI) injury, and permanent threshold shift (PTS), and (c) Level B harassment based on temporary threshold shift (TTS) and behavior in section 217.314(e)(5)(i) of the final rule;
- include in the interim SFV reports (1) number of strikes for impact pile driving, (2) the type(s) and location(s) of the sound attenuation systems, (3)  $SEL_{cum}$  for impact pile driving and UXO detonations, and (4) ranges to (a) Level A harassment (PTS for impact pile driving and UXO detonations) and (b) Level B harassment (TTS for UXO detonations and behavior for impact pile driving and UXO detonations) in section 217.315(d)(9)(i) of the final rule; and
- include in the final SFV reports (1) the impulse metric (in Pa-sec) for UXO detonations, (2) ranges to Level A harassment (PTS) and Level B harassment (behavior) for impact pile driving, (3) ranges to mortality, Level A harassment (slight lung injury, slight GI injury, and PTS), and Level B harassment (TTS and behavior) for UXO detonations, (4) source levels at 10 m during wind turbine operations, (5) received levels at 50 m, 100 m, and 250 m from the wind turbine during operations, and (6) operational parameters (i.e., direct drive/gearbox information, turbine rotation rate), sea state conditions, and any nearby anthropogenic activities when monitoring operational sound in section 217.315(d)(9)(ii) of the final rule.

## Mitigation and monitoring measures

The Commission noted issues of concern regarding the proposed mitigation and monitoring measures, similar to those raised in previous letters. Those issues included (1) insufficient mitigation and monitoring measures during impact pile driving, (2) lack of a detailed PAM plan for impact pile driving, and (3) insufficient mitigation and monitoring measures for UXO detonations. As one example, NMFS proposed a minimum visibility zone (e.g., 2,300 m in summer<sup>15</sup>; 88 Fed. Reg. 9073)

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<sup>13</sup> Level A harassment zones were based on exposure ranges and, depending on the species, inform the mitigation zones; while Level B harassment zones were based on acoustic ranges and inform the monitoring zones.

<sup>14</sup> Acoustic ranges represent the distance to a harassment threshold based on sound propagation through the environment (i.e., independent of any receiver); while exposure ranges represent the distance at which an animal can accumulate enough acoustic energy to exceed a harassment threshold based on how it moves through the environment (i.e., using animal movement modeling; 88 Fed. Reg. 9037).

<sup>15</sup> And footnote h in Table 40.

that is less than the Level A harassment zones for five of the six mysticete species (ranging up to 3,680 m), including North Atlantic right whales (2,510 m; Table 40 in the *Federal Register* notice) and which is contrary to its assertion that the minimum visibility zone corresponds to the maximum mysticete isopleth for three monopiles driven in a given day<sup>16</sup> (88 Fed. Reg. 9062). This issue is compounded by NMFS choosing not to use the largest Level A harassment zone of the scenarios analyzed as the basis for the mitigation zones for impact pile driving. That is, the Level A harassment zone for scenario 2, three monopiles driven in a given day, is the smallest of the four monopile-only installation scenarios. The 2,300-m minimum visibility zone is much smaller than the worst-case scenario Level A harassment zone of 4,230 m for fin whales and 2,940 m for North Atlantic right whales in summer<sup>17</sup>. This issue is further confused by Table 42 in the *Federal Register* notice that notes different minimum visibility and clearance zones for North Atlantic right whales—none of which extend to the largest Level A harassment zone of 4,230 m for fin whales, even though Table 42 indicated that the minimum visibility zone was based on the maximum non-humpback whale Level A harassment zone<sup>18</sup>. The information is inconsistent and unnecessarily confusing, particularly since the largest Level A harassment zones are based on fin whales for all scenarios, not humpback whales. In summary, the preamble to the proposed rule and the proposed rule itself would have greatly benefited from a comprehensive QA/QC review. For these reasons, the Commission recommends that NMFS base the various mitigation and monitoring zones, including the minimum visibility zone, on the largest of the Level A harassment zones in Tables 15 and 16 of the *Federal Register* notice.

In addition, the Commission again recommends that NMFS (1) require Sunrise Wind to submit a PAM plan for monitoring pile-driving activities and allow for public comment prior to issuing any final rule, (2) require wind energy applicants to submit a PAM plan, and SFV plans, prior to the agency publishing any proposed rule, (3) ensure that any PAM plan include, at a minimum, information on the minimum number, type (e.g., moored, drifting, or towed), location, bandwidth/sampling rate, estimated acoustic detection range, or sensitivity of the hydrophones or the detection software (e.g., PAMGUARD) that would be used, and (4) discuss with Sunrise Wind whether the operator would use vector sensors in addition to hydrophones to enhance detections, particularly of those vocalizations that may be drowned out by the hammer strikes and resulting reverberation. For UXO detonations, the Commission again recommends that NMFS require Sunrise Wind to deploy a dual sound attenuation system for UXO detonations and prohibit Sunrise Wind from conducting UXO detonations when currents are greater than 2 knots.

### **Errors and omissions in the *Federal Register* notice**

The following are some examples of additional omissions and errors that were noted in the preamble to and the proposed rule and that require correction for the final rule—

- The labels for the columns in Table 17 of the preamble are misplaced.
- The reference to Table 19 in the preamble stated that it represents the highest amount of take from all methods and all schedules; those take estimates are actually in Table 21.

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<sup>16</sup> Which is 3,680 m rounded to 3,700 m.

<sup>17</sup> The Level A harassment zone for combined monopile and pin pile installation is even larger at 5,250 m for fin whales in summer (Table 16 in the *Federal Register* notice).

<sup>18</sup> Both the 2,300-m minimum visibility zone and the reference to non-humpback whales likely are carryover text from the preamble to the proposed rule for Revolution Wind.

- The proposed rule referred to adding a new “Subpart FF”, but the heading of that section refers to “Subpart AF.”
- Section 217.310(b) of the proposed rule referred to taking that occurs in the BOEM lease area OCS-A 0486; it should instead refer to lease area OCS-A 0487. That section also refers to sea-to-shore transition points at Quonset Point in North Kingstown, Rhode Island; it should instead refer to onshore components located in Brookhaven, Long Island, New York.
- Sections 217.301(c)(2) and 217.312 of the proposed rule referred to installation of temporary cofferdams by vibratory pile driving; they should instead refer to installation and removal of a temporary casing pipe by impact pile driving and installation and removal of sheet piles and goal posts by vibratory pile driving.
- Section 217.312(a) of the proposed rule referred to OCS-DC monopile foundation installation; it should instead refer to OCS-DC pin pile jacket foundation installation.
- Section 217.314(c)(1)(ii) of the proposed rule stated that no more than three foundation monopiles would be installed per day; however, scenarios (3) and (4) both would allow for the installation of up to four monopiles per day.
- Section 217.314(c)(1)(iv) of the proposed rule stated that monopiles must not be larger than 15 m in diameter; Sunrise Wind has proposed to install 7/12-m tapered monopiles.
- Section 217.314(c) of the proposed rule is specific to WTG and OCS-DC installations, but sections 217.314(c)(3)(vi) and (vii) referred to requirements for SFV during UXO detonations. For consistency, the requirements for SFV conducted for UXO detonations should be moved to section 217.314(e)(5).
- The terms ‘small odontocetes’, ‘delphinids and harbor porpoises’, and ‘dolphins and porpoises’ were used interchangeably throughout the various mitigation measures in section 217.314 of the proposed rule; NMFS should choose one of the terms and use it consistently throughout.
- The terms ‘seals’ and ‘pinnipeds’ were used interchangeably or omitted altogether from the various mitigation measures in section 217.314 of the proposed rule; NMFS should choose one of the terms and use it consistently throughout.

### **Quality of proposed authorizations**

The Commission has made reference for numerous years to the quality of NMFS’s proposed authorizations. Many of the deficiencies noted herein could be fixed with appropriate QA/QC and general oversight of the authorizations at hand. It should not be left to the public or other federal agencies to attempt to decipher what the agency intended and ultimately what the agency is proposing. Sunrise’s LOA application was deemed complete 2 June 2022 (88 Fed. Reg. 8997). That is a more than sufficient amount of time for the agency to ensure that errors were identified and addressed, particularly since much of the information in the *Federal Register* notice was taken directly from the underlying supporting documentation and analyses that had been available for many months.

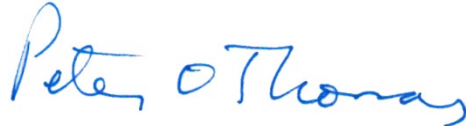
The Commission understands and supports the Administration’s push for wind energy development along the Atlantic coast. However, the quality of the authorizations, proposed and final, as well as the transparency of the process, should not be compromised for the sake of adhering to timelines and milestones. With numerous additional proposed authorizations in the queue for publication, the Commission strongly recommends that NMFS prioritize conducting QA/QC and

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general oversight of reviewing the preambles to and the proposed and final rules prior to publication in the *Federal Register*.

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

Sincerely,

A handwritten signature in blue ink that reads "Peter O. Thomas". The signature is written in a cursive, flowing style.

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

cc: Amy Scholik-Schlomer, NMFS Office of Protected Resources  
Nick Sisson, NMFS Greater Atlantic Regional Office