



MARINE MAMMAL COMMISSION

21 February 2012

Mr. P. Michael Payne, Chief
Permits, Conservation, and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Mr. Payne:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application submitted by Ocean Renewable Power Company Maine, LLC, seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act to take small numbers of marine mammals by harassment associated with the installation of a tidal energy turbine in Cobscook Bay, Maine. The Commission also has reviewed the National Marine Fisheries Service's 19 January 2012 *Federal Register* notice (77 Fed. Reg. 2701) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the National Marine Fisheries Service defer issuance of the requested incidental harassment authorization until it evaluates the potential effects of construction, installation, and subsequent operation of the turbine and use that information as a basis for (1) determining the potential for marine mammal injury or mortality, (2) designing mitigation and monitoring measures to minimize injury and mortality caused by direct interactions, and (3) determining whether the anticipated takes are expected to have negligible impacts on marine mammal species and stocks.

The Marine Mammal Commission further recommends that if any incidental take authorization is issued for these activities, that the National Marine Fisheries Service—

- authorize the taking of harbor seals and gray seals by both in-water and in-air harassment and, if the Service does not authorize in-air takes of those two species, require Ocean Renewable Power Company to shutdown pile-driving activities whenever a harbor seal or gray seal is within the in-air Level B harassment zone;
- require Ocean Renewable Power Company to monitor the presence and behavior of marine mammals for 30 minutes before, during, and for 30 minutes after all impact and vibratory pile-driving activities;
- require Ocean Renewable Power Company to record distances to observed marine mammals and document their behavior within the entirety of the Level B harassment zone for vibratory pile driving; and
- require Ocean Renewable Power Company to monitor before, during, and after all soft-starts of vibratory and impact pile-driving activities to gather the data needed to determine the effectiveness of this technique as a mitigation measure.

RATIONALE

Ocean Renewable Power Company proposes to construct a single underwater tidal energy turbine in Cobscook Bay, Maine. The Company would use a vibratory hammer and/or impact hammer to install eleven 76.2 cm-diameter steel pipe piles. Ten of those piles would support the tidal turbine, and one pile would support a platform that would house environmental monitoring equipment. The Company would use the vibratory hammer for up to three minutes and the impact hammer for up to five minutes to drive each pile. Although the planned pile driving would occur for only 7 to 12 days between 1 March and 30 November 2012, the Service is proposing to issue an incidental harassment authorization that would be valid for one year. Pile driving would occur only during daylight hours when weather conditions provide adequate visibility for monitoring harassment zones and during slack tides.

The Service preliminarily has determined that, at most, the proposed activities temporarily would modify the behavior of small numbers of harbor seals, gray seals, harbor porpoises, and Atlantic white-sided dolphins. It also anticipates that any impact on the affected species and stocks would be negligible. The Service does not anticipate any take of marine mammals by death or serious injury and believes that the potential for temporary or permanent hearing impairment will be at the least practicable level because of the proposed mitigation and monitoring measures. Those measures include—

- (1) limiting pile driving to 1 March to 9 April and after 8 November to avoid potential impacts to fisheries resources, with the possibility that pile driving could be conducted after 9 April if the Company can demonstrate that sound levels from the impact hammer are below the Service's guidelines for fish;
- (2) using wooden sound absorption cushions and/or a bubble curtain to reduce sound levels during impact pile driving;
- (3) conducting in-situ sound propagation measurements during the initial installation of the piles and adjusting the respective Level A and B harassment zones, as necessary;
- (4) using soft-start, delay, and shut-down procedures;
- (5) using four Service-approved observers to monitor for 30 minutes before, during, and for 30 minutes after impact pile driving; they would monitor (1) the exclusion zone, which the Service proposes to set at a distance of 100 m (i.e., Level A harassment zone) plus an additional 52-m buffer zone, and (2) the area beyond the exclusion zone out to a distance of 1.9 km, which would include the Level B harassment zone for impact pile driving;
- (6) using two additional observers to monitor the area within 4.6 km of the source (i.e., the estimated Level B harassment zone for vibratory pile driving) during at least three days to evaluate the effects of vibratory pile driving on marine mammal behavior and to validate take estimates;
- (7) reporting injured and dead marine mammals to the Service and local stranding network using the Service's phased reporting approach and suspending activities, if appropriate; and
- (8) submitting a final report to the Service.

Direct interactions with the tidal turbine

Ocean Renewable Power Company's application to the Service indicated that this project is the first phase of a multi-year project. Phase I would consist of construction (i.e., pile driving), installation, monitoring, and testing of a single tidal turbine unit. Phase II would involve the installation of four additional tidal turbines. The applicant has requested, and the Service has proposed, an authorization for taking marine mammals associated with Phase I pile driving only. In addition to harassment caused by pile driving, the installation and subsequent operation of the tidal turbine has the potential to take marine mammals through direct interactions with the turbine foils (Federal Energy Regulatory Commission 2012).

The Marine Mammal Commission supports the development of alternative energy sources, yet is concerned that the Service has not considered all aspects of construction and installation of the proposed tidal turbine in its analysis of potential effects. The Service has indicated that the applicant intends to install the turbine in June or July 2012, at which time the turbine would be operational. However, the proposed incidental harassment authorization considers pile-driving activities only. Because installation of the turbine piles has no utility independent of the eventual operation of the turbine, the Service also should consider the potential effects of operating the turbine in its analysis. Because operation of the turbines has the potential to injure or kill marine mammals by direct interactions with the turbine foils, incidental take regulations issued under section 101(a)(5)(A) may be needed. Additionally, although the use of tidal turbines is new in U.S. waters, the Service should review the existing literature in combination with the application, consider the potential means by which the turbines may interact with marine mammals and make reasoned judgments about the potential effects based on the best available scientific and commercial data. Doing so also is important for designing appropriate mitigation and monitoring measures. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service defer issuance of the requested incidental harassment authorization until it evaluates the potential effects of construction, installation, and subsequent operation of the turbine and use that information as a basis for (1) determining the potential for marine mammal injury or mortality, (2) designing mitigation and monitoring measures to minimize injury and mortality caused by direct interactions, and (3) determining whether the anticipated takes are expected to have negligible impacts on marine mammal species and stocks.

If the National Marine Fisheries Service issues any incidental take authorization for these activities, then the Commission makes the following additional recommendations that highlight other major concerns with the proposed incidental harassment authorization.

In-air takes

The principal means of taking marine mammals incidental to the proposed construction activities would be by exposure to sound from the vibratory and impact hammers. Because pinnipeds occur in the action area, taking may occur by exposure both to sound underwater and in air. However, the Service did not propose to use in-air thresholds or surrogate in-air data, because it contends that the nearest significant pinniped haul-out site is more than 11 km from the project site

and that in-air takes are not expected. That reasoning ignores the fact that pinnipeds may be taken by in-air sounds when they are in the water and swimming at the surface. Thus, the Marine Mammal Commission recommends that the National Marine Fisheries Service authorize the taking of harbor seals and gray seals by both in-water and in-air harassment. If the Service does not authorize in-air takes of those two species, then the Marine Mammal Commission recommends that the Service require Ocean Renewable Power Company to shutdown pile-driving activities whenever a harbor seal or gray seal is within the in-air Level B harassment zone.

Monitoring measures

Protected species observers would monitor the exclusion zone and Level B harassment zone for impact pile driving for 30 minutes before, during, and for 30 minutes after those activities. During vibratory pile driving, the observers would conduct behavioral observations intermittently (i.e., for at least three days during the project period), but only within a portion of the Level B harassment zone. The Service has indicated that it does not intend to require continuous observations during vibratory pile driving, because it believes that the sound levels generated by this activity at this site would not cause Level A harassment. However, the Company is required to report on the number of marine mammals that are harassed incidental to all of the proposed activities.

For a number of reasons, the Commission believes that it would be prudent for the Company to monitor the behavior of marine mammals during all vibratory pile-driving activities. Marine mammal responses to vibratory pile driving are not well studied and thus it is unclear how some marine mammals may react. Continuous monitoring is the only way to ensure that unexpected reactions are detected, documented, and evaluated. In contrast, intermittent and infrequent observations may not provide the data needed for accurate evaluation of the full effects of pile driving, including impacts from the sound produced. For example, if the affected areas are not being monitored during the periods when marine mammals are most likely to be present, then the resulting observations may not reflect actual impacts or accurately estimate the number of takes. In addition, monitoring during all pile-driving activities (i.e., during impact and vibratory hammer use) is the only way for the applicant and the Service to be confident that pile driving is causing the least practicable impact. For all of these reasons, the Marine Mammal Commission recommends that the National Marine Fisheries Service require Ocean Renewable Power Company to monitor the presence and behavior of marine mammals for 30 minutes before, during, and for 30 minutes after all impact and vibratory pile-driving activities. The Commission further recommends that the Service require Ocean Renewable Power Company to record distances to observed marine mammals and document their behavior within the entirety of the Level B harassment zone for vibratory pile driving.

The Commission has noted in previous correspondence commenting on other proposed incidental take authorizations that the effectiveness of ramp-up as a mitigation measure has yet to be empirically verified. As with the ramp-up of airguns, the Service should not assume, absent empirical verification, that using soft-starts when driving piles constitutes an effective mitigation method. Such verification may require not only collecting opportunistic data but also designing and conducting

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studies to test specific hypotheses regarding the utility of soft-start procedures and analysis of responses of the various species encountered. Because both vibratory and impact hammers have the potential to harass marine mammals, the Marine Mammal Commission recommends that the National Marine Fisheries Service require Ocean Renewable Power Company to monitor before, during, and after all soft-starts of vibratory and impact pile-driving activities to gather the data needed to determine the effectiveness of this technique as a mitigation measure.

Please contact me if you have questions about the Commission's recommendations or comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Timothy J. Ragen" followed by a flourish and the letters "for".

Timothy J. Ragen, Ph.D.
Executive Director

cc: Mary Colligan, National Marine Fisheries Service, Northeast Regional Office

References

Federal Energy Regulatory Commission. 2012. Environmental assessment for hydropower project pilot license: Cobscook Bay tidal energy project – FERC project no. 12711-005 (DOE/EA 1916), January 2012, 179 pages.