



MARINE MAMMAL COMMISSION

12 April 2012

Mr. P. Michael Payne, Chief
Permits and Conservation 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 AMEC Environment & Infrastructure, on behalf of Fishermen's Atlantic City Windfarm, 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 wind turbines off the New Jersey coast. The Commission also has reviewed the National Marine Fisheries Service's 13 March 2012 *Federal Register* notice (77 Fed. Reg. 14736) 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—

- require Fishermen's Atlantic City Windfarm to recalculate the Level A and Level B harassment zones using the revised source level of 195 dB re 1 μ Pa at 10 m;
- require the Fishermen's Atlantic City Windfarm to adjust the preliminary 1-km exclusion zone if it intends for the exclusion zone to encompass the Level B harassment zone or require shut down of pile driving if any species listed under the Endangered Species Act approaches or enters the revised Level B harassment zone;
- require Fishermen's Atlantic City Windfarm to use the in-situ sound propagation measurements at 50 percent power to determine the distance to the Level B harassment threshold during power-down procedures;
- require Fishermen's Atlantic City Windfarm to clarify their strategy and explain how it will be sufficient for monitoring the entire Level B harassment zone;
- ensure that mitigation measures can be implemented effectively and the number of takes can be reported accurately; and
- specify that the proposed number of pinniped takes may occur by in-water and in-air harassment when the animals are near the sound source.

RATIONALE

Fishermen's Atlantic City Windfarm, LLC, (Fishermen's) proposes to install six wind turbines in the waters of the Atlantic Ocean near Atlantic City, New Jersey. Each of the six turbines

would be supported by a foundation consisting of three piles. Fishermen's would use an impact hammer to drive each of the 18 steel anchoring piles, 122 cm in diameter, through a 132-cm diameter hollow steel pipe "jacket." Each pile would require up to 2,700 blows from a Delmag D-100 or similar type of impact hammer during a 6-hour period. Pile driving would occur for a maximum of 24 days from May through June 2012; however, the Service is proposing to issue the incidental harassment authorization for a four-month period, from May through August 2012. Pile driving would occur only in weather conditions that provide adequate visibility to monitor for marine mammals.

Fishermen's also would install a 12.8-cm diameter submarine electric composite cable to transmit power from the turbines to shore (i.e., a distance of approximately 4.5 km). The cable would be installed 2.7 m below the substrate using hydraulic jet plowing. Sound and general disturbance from the installation of the submarine cable and associated vessel activities is expected to be temporary and minimal.

The Service preliminarily has determined that, at most, the proposed activities temporarily would modify the behavior of small numbers of bottlenose dolphins, harbor seals, and harbor porpoises. As noted below, the applicant indicates that it will avoid takes of species listed under the Endangered Species Act by powering down or shutting down operations whenever those species approach the sound source. 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) conducting in-situ sound propagation measurements at 10 and 100 m from the source during pile driving of the first three piles and adjusting the respective Level A (190 dB re 1 μ Pa for pinnipeds and 180 dB re 1 μ Pa for cetaceans) and Level B (160 dB re 1 μ Pa for pinnipeds and cetaceans) harassment zones, as necessary;
- (2) using "soft-start" procedures (i.e., four three-strike sets at 50 percent power, with a one-minute waiting period between sets) at the beginning of each pile installation;
- (3) reducing pile-driving power to 50 percent if a marine mammal is sighted within or approaching the exclusion zone and shutting down pile driving if a marine mammal continues to move toward the sound source;
- (4) delaying pile driving if a marine mammal is sighted within the exclusion zone prior to pile driving or during soft-start procedures;
- (5) using two Service-approved observers to monitor the exclusion zone for 30 minutes before, during, and for 30 minutes after impact pile driving;
- (6) 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
- (7) submitting a final report to the Service.

Calculating harassment and exclusion zones

Fishermen's estimated that the source level for pile driving associated with this project would be 185 dB re 1 μ Pa at 10 m based on sound measurements from other pile-driving projects (ICF Jones & Stokes 2009). That source level then was used to estimate the distances to the various Level A and Level B harassment thresholds (i.e., 50 m and 500 m, respectively) using a practical spreading model (i.e., a dissipation rate of 4.5 dB re 1 μ Pa per doubling of distance). Fishermen's proposed to use a conservatively-based preliminary exclusion zone of 1 km, an area they stated would encompass the estimated Level A and Level B harassment zones.

However, the Commission's review of the sound measurements presented in the ICF Jones & Stokes 2009 paper indicates that the source level for driving a 122-cm pile using the Delmag D100-13 impact hammer was 195 dB re 1 μ Pa at 10 m, not 185 dB re 1 μ Pa at 10 m. Based on the practical spreading model, the Level A and Level B harassment zones (i.e., 180 and 160 dB re 1 μ Pa) should be approximately 107 m and 2.6 km, respectively. Fishermen's subsequently acknowledged in correspondence to the Service that they used an incorrect source level and underestimated the distances to the Level A and Level B harassment thresholds. Presumably, the Service will correct the errors in the final incidental harassment authorization. To ensure those errors are corrected, the Marine Mammal Commission recommends that the National Marine Fisheries Service require Fishermen's Atlantic City Windfarm to recalculate the Level A and Level B harassment zones using the revised source level of 195 dB re 1 μ Pa at 10 m.

In addition, the Service consulted with Fishermen's regarding the revised harassment zones and the applicability of the exclusion zone. It is the Commission's understanding that Fishermen's would continue to use a preliminary 1-km exclusion zone, even though it may no longer encompass the revised Level B harassment zone. That proposal is inconsistent with a statement in the *Federal Register* notice that indicates any new exclusion zone would encompass the 180- and 160-dB re 1 μ Pa isopleths to avoid any takes of marine mammals listed under the Endangered Species Act. As such, the Marine Mammal Commission recommends that the National Marine Fisheries Service require the Fishermen's Atlantic City Windfarm to adjust the preliminary 1-km exclusion zone if it intends for the exclusion zone to encompass the Level B harassment zone or require shut-down of pile driving if any species listed under the Endangered Species Act approaches or enters the revised Level B harassment zone. Otherwise, the application or authorization must be revised to address the risks to any listed species that may be affected.

In-situ sound propagation measurements

Fishermen's has indicated that it would conduct in-situ sound propagation measurements to ensure that distances to the 180- and 160-dB re 1 μ Pa (Level A and Level B harassment, respectively) thresholds are accurate. After those measurements are taken, Fishermen's would consult with the Service and adjust the Level A and Level B harassment zones and exclusion zone as necessary. This is especially important given (1) the discrepancy between the source level cited by Fishermen's in its application and referenced in ICF Jones & Stokes (2009) and (2) the stated intent to prevent takes of marine mammals listed under the Endangered Species Act. As such, the

Commission supports Fishermen's plans to conduct in-situ sound propagation measurements to obtain more accurate measurements of sound levels at the project site and to adjust the sizes of the estimated harassment and exclusion zones, as necessary.

In-situ sound propagation measurements also would be useful for determining sound levels during power-down procedures. Fishermen's proposed to reduce pile driving power to 50 percent if a marine mammal is sighted within or approaching the 1-km exclusion zone. The company stated that reducing pile-driving power by 50 percent would reduce the size of the Level B harassment zone to 300 m and that the adjusted 300-m harassment zone would be used as the basis for shutting down pile driving (i.e., shut-down would occur if a marine mammal approaches or enters the adjusted Level B harassment zone). However, the justification for using 300 m as the radius of the Level B harassment zone was not provided, and Fishermen's has since confirmed that information was not readily available regarding sound pressure levels from pile driving at various power levels. Rather than using an estimated and potentially erroneous adjusted Level B harassment zone, it would be preferable to determine the radius of the harassment zone from actual sound propagation measurements. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service require Fishermen's Atlantic City Windfarm to use the in-situ sound propagation measurements at 50 percent power to determine the distance to the Level B harassment threshold during power-down procedures.

Monitoring measures

The Service indicated that protected species observers would monitor the 1-km exclusion zone for 30 minutes before, during, and for 30 minutes after pile driving activities. However, based on the revised source level of 195 dB re 1 μ Pa at 10 m for pile driving, the preliminary exclusion zone would encompass only a portion of the revised Level B harassment zone of approximately 2.6 km. This would not allow applicants to report accurately the total number of marine mammals that are harassed incidental to pile-driving activities. Monitoring the entire Level B harassment zone is the only way for Fishermen's and the Service to be confident that pile driving is causing the least practicable impact. It also is the only way for Fishermen's to assert that marine mammals listed under the Endangered Species Act would be observed before they entered the exclusion zone, thus preventing takes of those species.

Fishermen's has stated in correspondence to the Service dated 23 March 2012 that they would monitor the Level B harassment zone by following a circular route at 2.6 km from the sound source and that observers would have the ability to detect marine mammals at the surface at a distance of 500 meters. However, Fishermen's mitigation and monitoring plan dated 27 Mar 2012 indicated that the observers would follow a circular route at 500 m from the pile driving site. It is not clear which of the two monitoring strategies would be followed or whether Fishermen's is now intending to deploy two sets of observers, one set monitoring the "shut-down" zone and one monitoring the extent of the Level B harassment zone. The Marine Mammal Commission therefore recommends that the National Marine Fisheries Service require Fishermen's Atlantic City Windfarm to clarify their strategy and explain how it will be sufficient for monitoring the entire Level B harassment zone. The Marine Mammal Commission further recommends that the National Marine

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Fisheries Service ensure that mitigation measures can be implemented effectively and the number of takes can be reported accurately.

In-air takes

Because pinnipeds occur in the project area, taking may occur by exposure both to sound underwater and in air. However, the Service contends that in-air sound levels are not a concern because the nearest significant pinniped haul-out site is 21 km from the project site. 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 specify that the proposed number of pinniped takes may occur by in-water and in-air harassment when the animals are near the sound source.

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

Sincerely,

A handwritten signature in blue ink that reads "Timothy J. Ragen". The signature is written in a cursive style with a long horizontal line extending from the end.

Timothy J. Ragen, Ph.D.
Executive Director

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

References

ICF Jones & Stokes, and Illingworth and Rodkin, Inc. 2009. Final technical guidance for assessment and mitigation of the hydrostatic effects of pile driving on fish. Prepared for California Department of Transportation. 298 pages.