ENVIRONMENTAL ASSESSMENT

Issuance of an Incidental Harassment Authorization to Fishermen's Atlantic City Windfarm, LLC to Take Marine Mammals by Harassment Incidental to Pile Driving off New Jersey

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LEAD AGENCY: USDOC, National Oceanic and Atmospheric Administration
National Marine Fisheries Service, Office of Protected Resources
1315 East West Highway
Silver Spring, MD 20910

RESPONSIBLE OFFICIAL: Helen M. Golde, Acting Director, Office of Protected Resources

FOR INFORMATION CONTACT: Office of Protected Resources
National Marine Fisheries Service
1315 East West Highway
Silver Spring, MD 20910
(301) 427-8400

LOCATION: Atlantic City, New Jersey

ABSTRACT: The National Marine Fisheries Service (NMFS) proposes to issue an Incidental Harassment Authorization to Fishermen's Atlantic City Windfarm, LLC (Fishermen's) for the taking, by Level B harassment, of small numbers of marine mammals, incidental to pile driving in New Jersey state waters.

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LIST OF ACRONYMS, ABBREVIATIONS, AND INITIALISMS

BiOp	Biological Opinion
CFR	Code of Federal Regulations
CEQ	President's Council on Environmental Quality
DOE	U.S. Department of Energy
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act

Fishermen's	Fishermen's Atlantic City Windfarm, LLC
ft	feet
IHA	Incidental Harassment Authorization
km	kilometer
m	meter
mi	mile
MMPA	Marine Mammal Protection Act
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
OMB	Office of Management Budget
PSO	Protected Species Observer
U.S.C.	United States Code

1. CHAPTER 1 – PURPOSE AND NEED FOR ACTION

1.1 DESCRIPTION OF PROPOSED ACTION

The National Marine Fisheries Service (NMFS) has received an application from Fishermen's Atlantic City Windfarm, LLC (Fishermen's) for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to pile driving in New Jersey state waters. Fishermen's construction activities, which have the potential to behaviorally disturb marine mammals, warrant an incidental take authorization from NMFS under section 101(a)(5)(D) of the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1631 *et seq*.).

The proposed action considered in this Environmental Assessment (EA) is NMFS' issuance of a 1-year IHA under section 101(a)(5)(D) of the MMPA, for the taking, by Level B harassment only, of small numbers of marine mammals incidental to pile driving off New Jersey.

This EA, titled "*Issuance of an Incidental Harassment Authorization to Fishermen's Atlantic City Windfarm, LLC to Take Marine Mammals by Harassment Incidental to Pile Driving off New Jersey*" (hereinafter, EA), addresses the impacts on the human environment that would result from issuance of this IHA for MMPA Level B takes of marine mammals during pile driving, taking into account the mitigation measures required in the IHA.

1.1.1 MMPA Purpose and Need

The MMPA and Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq*.) prohibit "takes" of marine mammals and of threatened and endangered species, respectively, with only a few specific exceptions. The applicable exceptions in this case are an exemption for incidental take of marine mammals in section 101(a)(5)(D) of the MMPA and 7(a)(4) of the ESA.

Section 101(a)(5)(D) of the MMPA directs the Secretary of Commerce to authorize, upon request, the incidental, but not intentional, taking of small numbers of marine mammals, by United States citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and a notice of a proposed authorization is provided to the public for review. Section 101(a)(5)(D) of the MMPA also establishes a 45-day time limit for NMFS' review of an application for an IHA followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of small numbers of marine mammals. Within 45 days of the close of the public comment period, NMFS must either issue or deny the IHA.

Purpose: The primary purpose of NMFS issuing an IHA to Fishermen's is to provide an exemption from the take prohibitions contained in the MMPA for the take of marine mammals incidental to Fishermen's pile driving.

Need: As noted above, the MMPA establishes a general moratorium or prohibition on the take of marine mammals, including take by behavioral harassment. The MMPA establishes a process by which individuals engaged in specified activities within a specified geographic area may request an IHA. Specifically, NMFS shall grant the IHA if it finds that the taking will have a negligible impact on the species or stock(s), and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant). The IHA must, where applicable, set forth the permissible methods of taking, other means of effecting the least practicable adverse impact on the species or stock and its habitat, and requirements pertaining to the mitigation, monitoring, and reporting of such takings.

Fishermen's has submitted a complete application demonstrating potential eligibility for issuance of an IHA. NMFS now has a corresponding duty to determine whether and how it can fashion an IHA authorizing take by harassment incidental to the activities described in the application. The need for this action is, therefore, established and framed by the MMPA and NMFS' responsibilities under section 101(a)(5)(D) of that Act, its implementing

regulations, and other applicable requirements which will influence its decision making, such as section 7 of the Endangered Species Act (ESA), which is discussed in more detail below this section.

The foregoing purpose and need guide NMFS in developing alternatives for consideration, including alternative means of mitigating potential adverse effects.

1.2 NEPA REQUIREMENTS AND SCOPE OF NEPA ANALYSIS

This EA focuses primarily on the environmental effects of authorizing MMPA Level B incidental takes of marine mammals during pile driving off New Jersey. The MMPA and its implementing regulations governing issuance of an IHA require that upon receipt of a valid and complete application for an IHA, NMFS must publish a notice of proposed IHA in the *Federal Register* within 45 days. The notice for Fishermen's proposed action summarized the purpose of the requested IHA, included a statement that NMFS would prepare an EA for the proposed action, and invited interested parties to submit written comments concerning the application and NMFS' preliminary analyses and findings including those relevant for consideration in the EA.

NOAA Administrative Order 216-6 (NAO 216-6) established agency procedures for complying with the National Environmental Policy Act (NEPA) and the implementing regulations issued by the President's Council on Environmental Quality (CEQ). Consistent with the intent of NEPA and the clear direction in NAO 216-6 to involve the public in NEPA decision-making, NMFS requested comments on the potential environmental impacts described in Fishermen's application and the proposed IHA. Comments received on the proposed IHA were considered during preparation of this EA.

NMFS has prepared this EA to assist in determining whether the direct, indirect, and cumulative impacts related to its issuance of the authorization for incidental take under the MMPA of three marine mammal species are likely to result in significant impacts to the human environment, or whether the analysis contained herein, including documents referenced and incorporated by reference and public comments received on the proposed IHA, supports the issuance of a Finding of No Significant Impact. Given the limited scope of the decision for which NMFS is responsible (i.e., whether or not to issue the authorization including prescribed means of take, mitigation measures, and monitoring requirements) and that this EA is intended to inform, the scope of analysis is limited to evaluating and disclosing the impacts to living marine resources and their habitat likely to be affected by issuance of an IHA authorizing the take of marine mammals incidental to Fishermen's pile driving activities. As described more fully below, the EA identifies all marine mammals that are likely to occur within the action area.

The analysis focuses on the impacts to certain marine mammal species that could potentially result from issuance of the IHA for the take of marine mammals incidental to the proposed pile driving off New Jersey; impacts that would result from the alternatives presented; and the consideration of potential cumulative environmental impacts. Impacts to other marine species and habitat located in the action area were considered unlikely, and thus received less detailed evaluation. The U.S. Army Corps of Engineers is preparing a separate EA to analyze impacts of their proposed project. NMFS provides a summary of those expected impacts in this document.

1.2.1 NEPA Scoping Summary

The purpose of scoping is to identify the issues to be addressed and any potentially significant environmental issues related to the proposed action, as well as identify and eliminate from detailed study the environmental issues that are not significant or that have been covered by review in prior NEPA analyses. An additional purpose of the scoping process is to identify the concerns of the affected public and federal agencies, states, and Indian tribes.

Under 50 CFR 216.104(b) of NMFS' implementing regulations for the MMPA, NMFS must, after deeming the application adequate and complete, publish in the *Federal Register* a notice of proposed IHA or receipt of a request for the implementation or re-implementation of regulations governing the incidental taking. Information gathered during the associated comment period is considered by NMFS in ensuring adequacy of preliminary determinations and proposed mitigation measures for IHAs. A notice of proposed IHA was published in the *Federal Register* on March 13, 2012 (77 FR 14736) and was made available for public review and comment for 30 days. Comments received on the proposed IHA were used to develop the scope of this EA.

1.2.2 PUBLIC INVOLVEMENT

During the public comment period for the notice of proposed IHA, NMFS only received comments from the Marine Mammal Commission. NMFS fully considered all comments, particularly those related to mitigation and monitoring, and developed responses that will appear in the *Federal Register* notice announcing final determination on the proposed IHA. NMFS does not repeat those responses here. Based on those comments, NMFS re-evaluated the mitigation and monitoring proposed for incorporation in the IHA. NMFS determined, based on the best available data, that the proposed measures are presently the most feasible and effective measures capable of implementation by Fishermen's during pile driving activities.

1.3 APPLICABLE LAWS AND NECESSARY FEDERAL PERMITS

This section summarizes federal, state, and local permits, licenses, approvals, and consultation requirements necessary to implement the proposed action.

1.3.1 THE NATIONAL ENVIRONMENTAL POLICY ACT

NEPA's EIS requirement is applicable to all "major" federal actions significantly affecting the quality of the human environment. Federal actions include activities that are fully or partially funded, regulated, conducted, or approved by a federal agency. NMFS' issuance of an IHA for incidental harassment of marine mammals represents approval and regulation of takes of marine mammals incidental to the applicant's activities and is a federal action for which environmental review is required. While NEPA does not dictate a substantive outcome for an IHA, it requires consideration of environmental issues in federal agency planning and decision making, and requires an analysis of alternatives and direct, indirect, and cumulative environmental effects of the NMFS proposed action to authorize MMPA Level B incidental take. As noted, NMFS has prepared this EA to assist in determining whether an EIS is necessary for the action.

1.3.2 THE ENDANGERED SPECIES ACT

Section 7 of the ESA requires consultation with the appropriate federal agency (either NMFS or the U.S. Fish and Wildlife Service) for federal actions that "may affect" a listed species or critical habitat. NMFS' issuance of an IHA affecting ESA-listed species or designated critical habitat, directly or indirectly, is a federal action subject to these section 7 consultation requirements. Accordingly, NMFS is required to ensure that its action is not likely to jeopardize the continued existence of any threatened or endangered species or result in destruction or adverse modification of critical habitat for such species. Regulations specify the requirements for these consultations (50 CFR § 402).

NMFS has determined that issuance of the IHA would not affect ESA-listed marine mammals. Therefore, section 7 consultation is not required for issuance of an IHA.

1.3.3 THE MARINE MAMMAL PROTECTION ACT

Section 101(a)(5)(D) of the MMPA directs the Secretary of Commerce to authorize, upon request, the incidental, but not intentional, taking by harassment of small numbers of marine mammals of a species or population stock, for periods of not more than one year, by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specific geographic region if certain findings are made and a *Federal Register* notice of a proposed authorization is provided to the public for review.

Section 101(a)(5)(D) of the MMPA established an expedited process by which U.S. citizens can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as:

> any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild ["Level A harassment"]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering ["Level B harassment"].

Section 101(a)(5)(D) of the MMPA establishes a 45-day time limit for NMFS' review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of small numbers of marine mammals. Not later than 45 days after the close of the public comment period, if the Secretary of Commerce makes the findings set forth in section 101(a)(5)(D)(i) of the MMPA, the Secretary of Commerce shall issue the authorization with appropriate conditions to meet the requirements of section 101(a)(5)(D)(ii) of the MMPA.

NMFS has promulgated regulations to implement the permit provisions of the MMPA (50 CFR Part 216) and has produced Office of Management and Budget (OMB)-approved application instructions (OMB Number 0648-0151) that prescribe the procedures necessary to apply for permits. All applicants must comply with these regulations and application instructions in addition to the provisions of the MMPA. Applications for an IHA must be submitted according to regulations at 50 CFR § 216.104.

1.3.4 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

Under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), Congress defined Essential Fish Habitat (EFH) as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. 1802(10)). The EFH provisions of the Magnuson-Stevens Act offer resource managers means to accomplish the goal of giving heightened consideration to fish habitat in resource management. NMFS Office of Protected Resources is required to consult with NMFS Office of Habitat Conservation for any action it authorizes (e.g., incidental take), funds, or undertakes, or proposes to authorize, fund, or undertake that may adversely affect EFH. This includes renewals, reviews, or substantial revisions of actions.

There are 26 fish species with designated EFH or commercial importance within Fishermen's proposed action area. As the federal action agency for permitting Fishermen's construction, the Army Corps of Engineers will consult with NMFS Northeast Region on EFH. The mitigation and monitoring measures that would be required by NMFS' IHA for this action would not result in adverse effects to EFH.

2. CHAPTER 2 – ALTERNATIVES INCLUDING THE PROPOSED ACTION

The NEPA implementing regulations (40 CFR § 1502.14) and NAO 216-6 provide guidance on the consideration of alternatives to a federal proposed action and require rigorous exploration and objective evaluation of all reasonable alternatives. Each alternative must be feasible and reasonable in accordance with the implementing regulations (40 CFR §§ 1500-1508). This chapter describes the range of potential actions (alternatives) determined reasonable with respect to achieving the stated purpose and need, as well as alternatives eliminated from detailed study and also summarizes the expected outputs and any related mitigation for each alternative.

This EA evaluates alternatives that would fulfill NMFS' purpose and need, namely: (1) the issuance of an IHA for the take of marine mammals by Level B behavioral harassment, incidental to Fishermen's pile driving activities in New Jersey state waters; and (2) compliance with the MMPA which sets forth specific standards (i.e., no unmitigable adverse impact on subsistence, negligible impact, and providing means of effecting the least practicable adverse impact) that must be met in order for NMFS to issue an IHA.

NMFS' proposed action (preferred) alternative represents the activities proposed by the applicant for the IHA, along with required monitoring and mitigation measures that would minimize potential adverse environmental impacts.

2.1 PROJECT OBJECTIVES

The fundamental objective of the project is to construct jacketed foundations to support six electric generating windmills. This is the first phase of ultimately constructing a 20 megawatt offshore wind farm that would generate and deliver electricity to an onshore location.

2.2 ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, NMFS would not issue an IHA to Fishermen's for the taking, by Level B harassment, of small numbers of marine mammals, incidental to pile driving activities. The MMPA prohibits all takings of marine mammals unless authorized by a permit or exemption under the MMPA. The consequences of not authorizing incidental take are (1) the entity conducting the activity may be in violation of the MMPA if take occurs, (2) mitigation and monitoring measures cannot be required by NMFS, (3) mitigation measures may or may not be performed voluntarily by the applicant, and (4) the applicant may choose not to conduct the activity.

By undertaking measures to further protect marine mammals from incidental take through the authorization program, the impacts of these activities on the marine environment can potentially be reduced. While NMFS does not authorize the pile driving itself, NMFS does authorize the incidental harassment of marine mammals incidental to this activity and prescribes the methods of taking and other means of effecting the least practicable adverse impact on the species and stocks and their habitats. If an IHA was not issued, Fishermen's could decide either to cancel pile driving or to continue the proposed activity. If the latter decision was made, Fishermen's could independently implement mitigation and monitoring measures, which potentially would result in the same environmental impacts as the preferred alternative; however, Fishermen's would be proceeding without authorization from NMFS pursuant to the MMPA. If Fishermen's did not implement mitigation measures during pile driving activities, increased takes of marine mammals by harassment (and potentially by injury or mortality) could occur if the activities were conducted when marine mammals were present. Although the No Action Alternative would not meet the purpose and need to allow incidental takings of marine mammals under certain conditions, CEQ regulations require consideration and analysis of a No Action Alternative for the purposes of presenting a comparative analysis to the action alternatives.

2.3 ALTERNATIVE 2 – PROPOSED ACTION (PREFERRED)

The Proposed Action is the Preferred Alternative. Under this alternative, NMFS would issue an IHA to Fishermen's allowing the take, by Level B harassment, of three marine mammal species, incidental to pile driving with the mitigation, monitoring, and reporting conditions contained within Fishermen's IHA application and NMFS' proposed IHA *Federal Register* notice. Accordingly, the Proposed Action would satisfy the purpose and need of the NMFS MMPA action – issuance of an IHA, along with required mitigation and monitoring measures – and would enable Fishermen's to comply with the MMPA.

2.3.1 PILE DRIVING OPERATIONS

NMFS' proposed IHA *Federal Register* notice (77 FR 14736, March 13, 2012) describes the pile driving protocols in detail and this EA briefly summarizes them here. Installation of 18 steel pipe piles would take place about 4.5 km offshore. Installation would require a maximum of 24 days during May and June.

2.3.2 MITIGATION AND MONITORING MEASURES

The NMFS' proposed IHA *Federal Register* notice (77 FR 14736, March 13, 2012) describes the required mitigation and monitoring measures in detail and this EA briefly summarizes them here. To reduce the potential for disturbance from acoustic stimuli associated with the activities, the following mitigation and monitoring measures would be in place for marine mammals: (1) establishment of an exclusion zone; (2) pile driving shut down and delay procedures; (3) soft-start procedures; (4) visual monitoring; and (5) hydroacoustic monitoring.

Exclusion Zones: NMFS has determined that for acoustic effects, using acoustic thresholds in combination with corresponding exclusion zones is an effective way to consistently apply measures to avoid or minimize the impacts of an action. During all in-water impact pile driving, Fishermen's would establish a radius around each pile driving site to be continuously monitored for marine mammals. If a marine mammal is observed nearing or entering this perimeter, Fishermen's would reduce hammering power (or stop hammering) to reduce the sound pressure levels. More specifically, Fishermen's would establish a preliminary 1,000-m exclusion zone around each pile driving site, based on the estimated rates of sound attenuation discussed earlier in this notice. This distance would encompass the estimated 180-dB isopleth, within which injury could occur, plus an additional 893-m buffer. Once hydroacoustic monitoring is conducted, the exclusion zone may be adjusted accordingly, with input from NMFS, so that marine mammals are not exposed to Level A harassment sound pressure levels.

Shut Down and Delay Procedures: If a protected species observer (PSO) sees a marine mammal within or approaching the exclusion zone prior to start of impact pile driving, the protected species observer would notify the construction manager (or other authorized individual) who would then be required to delay pile driving until the marine mammal leaves the exclusion zone or if the animal has not been resighted within 15/30 minutes (pinnipeds/cetaceans). If a marine mammal is sighted within or approaching the exclusion zone during pile driving, pile driving would be reduced to 50 percent capacity, which would reduce the size of the Level A and Level B harassment zones. If an animal approaches or enters the new Level A zone, then pile driving operations would be stopped until the animal has left the exclusion zone or 15/30 minutes (pinnipeds/cetaceans) have passed since the last sighting.

Soft-start Procedures: Fishermen's would implement a "soft-start" technique at the beginning of each pile installation to allow marine mammals to leave the immediate area before sound sources reach full energy. Soft-start procedures would be conducted prior to driving each pile if hammering ceases for more than 15/30 minutes (pinnipeds/cetaceans).

Visual Monitoring: Fishermen's would have at least two PSOs monitoring the 1,000-m exclusion zone 30 minutes before, during, and 30 minutes after all pile driving.

Hydroacoustic Monitoring: Fishermen's would take sound measurements during the pile driving of the first three jacket foundations. Fishermen's would establish one reference location at a distance of 100 m from the sound source. They would take sound measurements from the reference location at two depths (one near the middle of the water column and one near the bottom of the water column). Two additional in-water measurements would be taken in two different directions of the pile driving site. Sound measurements would also be recorded 10 m from the sound source, as necessary, to determine the source level and affirm the distances to the Level B and Level A harassment zones. Fishermen's would integrate 90 percent of the energy window from each blow into their sound analysis when computing RMS sound pressure levels.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

NMFS considered whether other alternatives could meet the purpose and need and support Fishermen's proposed activity. An alternative that would allow for the issuance of an IHA with no required mitigation or monitoring was considered but eliminated from consideration, as it would not be in compliance with the MMPA and therefore would not meet the purpose and need. For that reason, this alternative is not analyzed further in this document.

3. CHAPTER 3 – AFFECTED ENVIRONMENT

A summary of the physical and biological environment of the project area was included in Fishermen's IHA application and NMFS' notice of proposed IHA (AMEC, 2011; 77 FR 14736, March 13, 2012). In addition to the marine mammal stocks and species that are the subject of the IHA, a number of sea birds, sea turtles, fish, and invertebrates may be found in the action area. The project area is located about 4.5 km offshore from Atlantic City, New Jersey and consists of about 170 acres – calculated as the perimeter around the six turbines plus a five-ft width along the centerline of the cable route. However, the portion of the area that will be covered by turbine foundations is less than 5 acres.

3.1 PHYSICAL ENVIRONMENT

3.1.1. Bathymetry and Oceanography

Pile driving activities would take place within a 4.3 acre area offshore from Atlantic City. Sediment data collected during the benthic survey in November 2010 indicates that the seafloor consists mainly of fine-medium grain sand. Water depth at the proposed project location is about 8 to 12 m at mean lower low water.

3.2 BIOLOGICAL ENVIRONMENT

This nearshore area of the Atlantic Ocean is a habitat for numerous coastal and marine species, including birds, fish, and marine mammals, that are protected by a variety of environmental regulations. NMFS' limited action of issuing an IHA would allow for the harassment of marine mammals incidental to pile driving and, therefore, is the focus of this section.

However, other impacts that will be addressed in the U.S. Army Corps of Engineer's EA include: the impact to existing bottom sediment from the installation of rip rap; and the impact of the water jet cutting apperatus (increased turbidity) from cable installation. These impacts are not expected to be significant and the increased turbidity would be temporary.

3.2.1 MARINE MAMMALS

There are 42 marine mammal species with confirmed or potential occurrence off the coast of New Jersey. Of these, 20 species are regular inhabitants to the northeast Atlantic Ocean and could occur in the proposed project area at some point during the year. Information on these species was provided in the proposed IHA notice (77 FR 14736, March 13, 2012). However, only bottlenose dolphins (*Tursiops truncatus*), harbor porpoises (*Phocoena phocoena*), and harbor seals (*Phoca vitulina*) are considered likely to occur in the action area during May and June.

3.2.2 SEABIRDS

More than 150 bird species were recorded during the New Jersey Department of Environmental Protection's Wind Ocean Ecological Baseline Surveys project. The project's final report summarizes the survey results with detailed information on bird species and distribution (Geo-Marine, Inc., 2010).

3.2.3 MARINE TURTLES

During the New Jersey Department of Environmental Protection's ecological baseline study, leatherback turtles (*Dermochelys coriacea*) and loggerhead turtles (*Caretta caretta*) were observed along the 13,123-km trackline. However, most of the sea turtle sightings took place farther offshore than the proposed pile driving activities and no sea turtles were observed within the area potentially impacted by pile driving noise.

3.2.4 FISH

There are numerous fish species inhabiting this portion of the Atlantic Ocean. Twenty-six species of fish have designated EFH during at least one life stage within Fishermen's larger proposed project area: Atlantic cod (*Gadus morhua*); Atlantic butterfish (*Peprilus triacanthus*); Atlantic sea herring (*Clupea harengus*); black sea bass (*Centropristus striata*); bluefin tuna (*Thunnus thynnus*); bluefish (*Pomatomus salatrix*); clearnose skate (*Raja eglanteria*); cobia (*Rachycentron conadum*); dusky shark (*Charcharinus obscures*); king mackerel (*Scomberomorus cavalla*); little skate (*Raja erinacea*); monkfish (*Lophius americanus*); red hake (*Urophycis chuss*); sandbar shark (*Charcharinus plumbeus*); scup (*Stenotomus chrysops*); shortfin mako shark (*Isurus oxyrhyncus*); Spanish mackerel

(*Scomberomorus maculates*); spiny dogfish (*Squalus acanthias*); summer flounder (*Paralicthys dentatus*); surf clam (*Spisula solidissima*); tiger shark (*Galeocerdo cuvieri*); windowpane flounder (*Scopthalmus aquosus*); winter flounder (*Pseudopleuronectes americanus*); winter skate (*Leucoraja ocellata*); witch flounder (*Glyptocephalus cynoglossus*); and yellowtail flounder (*Limanda ferruginea*). Detailed information on each EFH species is provided in the applicant's EFH assessment (Normandeau Associates, Inc., 2011).

3.2.5 INVERTEBRATES

Numerous invertebrate species exist in this portion of the western North Atlantic. One of the most prominent and commercially important is the surf clam (*Spisula solidissima*). The Atlantic surf clam is the largest bivalve mollusk in the western North Atlantic and inhabits sandy continental shelf areas from the Gulf of St. Lawrence to Cape Hatteras. Around New Jersey, the highest concentrations of surf clams occur at depths less than 18 m. More detailed information on surf clams and the presence of invertebrates in the proposed action area is provided in the applicant's EFH assessment (Normandeau Associates, Inc., 2011).

4. CHAPTER 4 –ENVIRONMENTAL CONSEQUENCES

NMFS has evaluated the potential impacts of Fishermen's action in order to determine whether to authorize incidental take of marine mammals under the MMPA. NMFS' evaluation indicates that any direct or indirect effects of the action would not result in a substantial impact to living marine resources or their habitats and would not have any adverse impacts on biodiversity or ecosystem function. Effects of the proposed action are considered to be short-term, temporary in nature, and negligible, and unlikely to affect normal ecosystem function or predator/prey relationships; therefore, there would not be a substantial impact on marine life biodiversity or on the normal function of the near shore marine environment. NMFS has determined that appropriate mitigation measures would be in place to minimize impacts to marine mammals and other marine species.

Fishermen's proposes to conduct pile driving during daylight hours for a maximum of 24 days. During pile driving, any displacement of fish species in the proposed action would be temporary. Many fish species that do not have swim bladders (such as bottom-dwelling species, including flatfish) tend to have relatively poor auditory sensitivity and are not likely to be affected by exposure to intense noise. Pile driving may potentially displace prey items of marine mammals, such as fish. However, prey items would return after pile driving ends and the ambient sound has returned to baseline levels.

The impacts of pile driving on marine mammals are specifically related to acoustic activities, and these are expected to be temporary in nature, negligible in intensity, and would not result in substantial impacts to marine mammals or to their role in the ecosystem. NMFS anticipates, and would authorize, the incidental Level B harassment only of small numbers of marine mammals, in the form of temporary behavioral disturbance. NMFS does not anticipate that take by injury (Level A harassment), serious injury, or mortality would occur and expects that harassment takes would be at the lowest level practicable due to the incorporation of the mitigation measures required by the proposed IHA and analyzed in this EA. Level B harassment is not expected to affect biodiversity or ecosystem function.

4.1 EFFECTS OF ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, NMFS would not issue an IHA to Fishermen's for the proposed pile driving activities. In this case, Fishermen's would decide whether or not to continue with pile driving. If Fishermen's chose not to conduct the activity, then there would be no effects to marine mammals. Conducting the activity without an MMPA authorization (i.e., an IHA) could result in a violation of federal law.

If Fishermen's decided to conduct some or all of the activity without implementing any mitigation measures, and if activities occur when marine mammals are present in the action area, there is the potential for unauthorized harassment of marine mammals. The sounds produced by pile driving would have the potential to cause behavioral harassment of marine mammals in the action area, while some marine mammals may avoid the area altogether. Additionally, masking of natural sounds may occur. Auditory impacts (i.e., temporary and permanent threshold shifts) could also occur if no mitigation or monitoring measures are implemented. Monitoring of exclusion zones for the presence of marine mammals allows for the implementation of mitigation measures, such as shutdowns and delays when marine mammals occur within these zones. These measures are required to prevent the onset of shifts in hearing thresholds. However, if a marine mammal occurs within these high energy ensonified zones, it is possible that hearing impairments to marine mammals could occur. Additionally, although unlikely, based on an animal's proximity to the sound source, permanent threshold shift (PTS) could also occur, but this possibility is thought to be unlikely. If Fishermen's decided to implement mitigation measures similar to those described in the proposed IHA, then the impacts would most likely be similar to those described for Alternative 2 below.

4.2 EFFECTS OF ALTERNATIVE 2 – PREFERRED ALTERNATIVE

The IHA *Federal Register* notice, incorporated by reference (77 FR 14736, March 13, 2012), describes in detail the potential effects of pile driving on marine mammals. In summary, NMFS expects any impacts from elevated sound levels to be temporary, behavioral harassment (such as avoidance or alteration or behavior).

Fishermen's proposed a number of monitoring and mitigation measures for marine mammals, which were included in the proposed IHA *Federal Register* notice (77 FR 14736, March 13, 2012). In analyzing the effects of the preferred alternative, NMFS has considered the following monitoring and mitigation measures as part of the preferred alternative:

(1) proposed exclusion zone;
(2) pile driving shut-down and delay procedures;
(3) soft-start procedures;
(4) visual monitoring by PSOs; and
(5) hydroacoustic monitoring.

Inclusion of these monitoring and mitigation measures is anticipated to minimize and/or avoid impacts to marine resources. With the above planned monitoring and mitigation measures, any unavoidable impacts to a marine mammal encountered are expected to be limited to short-term, localized changes in behavior (such as brief masking of natural sounds) and short-term changes in animal distribution near the pile hammer. At worst, effects on marine mammals may be interpreted as falling within the MMPA definition of "Level B behavioral harassment." Under the proposed action, NMFS expects no long-term or substantial adverse effects on marine mammals, the populations to which they belong, or on their habitats.

NMFS does not anticipate that take by injury (Level A harassment), serious injury, or mortality would occur and expects that harassment takes would be at the lowest level practicable due to the incorporation of the mitigation measures proposed in the application and NMFS' notice of proposed IHA (77 FR 14736, March 13, 2012), nor is take by injury, serious injury, or mortality authorized by the proposed IHA.

4.2.1 COMPLIANCE WITH NECESSARY LAWS – NECESSARY FEDERAL PERMITS

NMFS has determined that the IHA is consistent with the applicable requirements of the MMPA, ESA, and NMFS' implementing regulations. The applicant has secured or applied for necessary permits from NMFS. The applicant is responsible for complying with all other applicable laws and regulations.

4.2.2 UNAVOIDABLE ADVERSE IMPACTS

A summary of unavoidable adverse impacts to marine mammals occurring in the proposed action area and their habitats was included in NMFS' notice of proposed IHA (77 FR 2071, January 19, 2012).

NMFS does not expect Fishermen's activities to have adverse consequences on the viability of marine mammals in the proposed project area. Further, NMFS does not expect any changes to annual rates of recruitment or survival of marine mammals exposed to elevated sound levels. Numbers of individuals of all species taken by harassment are expected to be small (relative to species or stock abundance), and pile driving activities would have a negligible impact on the affected species or stocks of marine mammals. The MMPA requirement of ensuring the proposed action has no unmitigable adverse impact to subsistence uses does not apply here because of the location of the proposed activity.

4.3 CUMULATIVE EFFECTS

Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable

future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR§1508.7). Cumulative impacts may occur when there is a relationship between a proposed action and other actions expected to occur in a similar location or during a similar time period, or when past or future actions may result in impacts that would additively or synergistically affect a resource of concern. These relationships may or may not be obvious. Actions overlapping within close proximity to the proposed action can reasonably be expected to have more potential for cumulative effects on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide temporally will tend to offer a higher potential for cumulative effects.

Actions that might permanently remove a resource would be expected to have a potential to act additively or synergistically if they affected the same population, even if the effects were separated geographically or temporally. Note that the proposed action considered here would not be expected to result in the removal of individual cetaceans or pinnipeds from the population or to result in harassment levels that might cause animals to permanently abandon preferred feeding areas or other habitat locations, so concerns related to removal of viable members of the populations are not implicated by the proposed action. This cumulative effects analysis considers these potential impacts, but more appropriately focuses on those activities that may temporally or geographically overlap with the proposed activity such that repeat harassment effects warrant consideration for potential cumulative impacts to the affected four marine mammal species and their habitats.

Human activities in the region of the proposed pile driving include extensive commercial fishing, marine resource harvesting, aquaculture, and vessel traffic. As described in Richardson *et al*. (1995), marine mammals are likely habituated and tolerant to a certain degree of anthropogenic disturbance, including noise. Fishermen's proposed action is not likely to add an increment of disturbance that would cumulatively, when combined with other actions, result in significant adverse impacts to marine mammals. In addition to the activities listed above, future environmental effects may result from Fishermen's proposed offshore wind project. Fishermen's plans to construct and operate a 20 megawatt offshore wind farm at the location of the pile driving activities. Fishermen's proposed pile driving activities would not overlap with future construction or operation of the turbine units. The environmental effects of Fishermen's long-term project will be analyzed in a separate NEPA document. Any future authorizations would have to undergo the same permitting process and would take Fishermen's pile driving activities into consideration when addressing cumulative effects.

NMFS' proposed action of issuing an IHA for the incidental take of marine mammals by Level B harassment in New Jersey state waters is only expected to result in minimal impacts to marine species in the area. This limited action and any temporary, behavioral effects that may result from Fishermen's proposed action, are not expected to contribute substantially to other cumulative impacts from activities offshore New Jersey.

4.4 CONCLUSION

The inclusion of the mitigation and monitoring requirements in the IHA, as described in the Preferred Alternative, would ensure that Fishermen's activity and the proposed mitigation measures under Alternative 2 (Preferred Alternative) are sufficient to minimize any potential adverse impacts to the human environment, particularly marine mammal species or stocks and

their habitat. With the inclusion of the required mitigation and monitoring requirements, NMFS has determined that the proposed pile driving activities, and NMFS' proposed issuance of an IHA to Fishermen's, would result at worst in a temporary modification of behavior (Level B harassment) of some individuals of three species of marine mammals. In addition, no take by injury, serious injury, and/or mortality is anticipated, and the potential for temporary or permanent hearing impairment would be avoided through the incorporation of the mitigation and monitoring measures described earlier in this document.

5. LIST OF PREPARERS AND AGENCIES CONSULTED

Agencies Consulted
No other persons or agencies were consulted in preparation of this EA.

Prepared By
Michelle Magliocca
Fishery Biologist
Permits and Conservation Division
Office of Protected Resources, NOAA/National Marine Fisheries Service

6. REFERENCES

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