

INCIDENTAL HARASSMENT AUTHORIZATION

Mayflower Wind Energy, LLC (Mayflower) is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)) to incidentally harass marine mammals, under the following conditions.

1. This incidental harassment authorization (IHA) is effective for one year from the date of issuance.
2. This IHA authorizes take incidental to marine site characterization surveys in coastal waters of Massachusetts, as specified in Mayflower's IHA application.
3. General Conditions
 - (a) A copy of this IHA must be in the possession of Mayflower, the vessel operators, the lead protected species observers (PSO), and any other relevant designees of Mayflower operating under the authority of this IHA.
 - (b) The species and/or stocks authorized for taking are listed in Table 1. Authorized take, by Level B harassment only, is limited to the species and numbers listed in Table 1.
 - (c) The taking by injury, serious injury, or death of any of the species listed in Table 1 or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA. Any taking exceeding the authorized amounts listed in Table 1 is prohibited and may result in the modification, suspension, or revocation of this IHA.
 - (d) Mayflower must ensure that the vessel operator and other relevant vessel personnel, including the PSO team, are briefed on all responsibilities, communication procedures, marine mammal monitoring protocols, operational procedures, and IHA requirements prior to the start of survey activity, and when relevant new personnel join the survey operations.
4. Mitigation Requirements

- (a) Mayflower must employ independent, qualified, NMFS-approved PSOs (see section 5 of this IHA) to conduct visual monitoring. When specified acoustic sources (impulsive: boomers and/or sparkers; non-impulsive: non-parametric sub-bottom profilers) are operating, a minimum of one (1) PSO must be on duty during daylight hours and two (2) PSOs must be on duty during nighttime hours.
 - (i) Vessels conducting HRG survey activities in very-shallow waters using shallow-draft vessels must have one visual PSO onboard. The vessel captain (or crew member on watch) must conduct observations when the PSO is on required breaks. All vessel crew conducting PSO watches must receive training in monitoring and mitigation requirements and species identification necessary to reliably carry out the mitigation requirements
- (b) Visual monitoring must begin no less than 30 minutes prior to initiation of acoustic sources and must continue until 30 minutes after use of acoustic sources ceases.
- (c) Operational Exclusion Zones – PSOs must establish and monitor marine mammal Exclusion Zones. Distances to Exclusion Zones must be from any acoustic sources, not the distance from the vessel. Exclusion Zones must be as follows:
 - (i) 500-m Exclusion Zone for North Atlantic right whales for use of impulsive acoustic sources (e.g., boomers and/or sparkers) and non-impulsive, nonparametric sub-bottom profilers; and
 - (ii) 100-m Exclusion Zone for all other marine mammals for use of impulsive acoustic sources (e.g., boomers and/or sparkers), except for as noted in condition 4(g)(vii) of this IHA
- (d) Harassment Zones – PSOs must establish and monitor a 141-m Level B harassment zone during use of acoustic sources used during the survey.
- (e) Pre-clearance observation – PSOs must conduct 30 minutes of pre-start clearance observation prior to initiation of HRG survey operations (except as described under condition 4(g)(ix) of this IHA). If a marine mammal is observed entering or within the pre-start clearance zones (described below) during the pre-start clearance period, relevant acoustic sources must not be initiated until the marine mammal(s) is confirmed by visual observation to have exited the relevant zone, or, until an additional time period has elapsed with no further sighting of the animal (15 minutes for small odontocetes and seals and 30 minutes for all other species, see Table 1). The pre-start clearance requirement includes small delphinids that approach the vessel. HRG surveys must not be initiated if:

- (i) a North Atlantic right whale is observed within a 500-m radius of impulsive acoustic sources (e.g., boomers and/or sparkers) and non-impulsive, nonparametric sub-bottom profilers during the pre-start clearance period; or
 - (ii) any other marine mammals are observed within a 100-m radius of impulsive acoustic sources (e.g., boomers and/or sparkers) and non-impulsive, nonparametric sub-bottom profilers during the pre-start clearance period.
- (f) Ramp-up – when technically feasible, acoustic sources must be ramped up at the start or restart of survey activities. Ramp-up must begin with the power of the smallest acoustic equipment at its lowest practical power output. When technically feasible the power must then be gradually turned up and other acoustic sources added in a way such that the source level would increase gradually.
- (i) Ramp-up activities will be delayed if a marine mammal(s) enters its respective exclusion zone. Ramp-up will continue if the animal has been observed exiting its respective exclusion zone or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes and seals and 30 minutes for all other species).
- (g) Shutdown requirements
- (i) If a marine mammal is observed within or entering the relevant Exclusion Zones as described under 4(c) of this IHA while acoustic sources are operational, the acoustic sources must be immediately shut down (except as described in condition 4(g)(vii) of this IHA).
 - (ii) Any PSO on duty has the authority to call for shutdown of acoustic sources. When there is certainty regarding the need for mitigation action on the basis of visual detection, the relevant PSO(s) must call for such action immediately.
 - (iii) When a shutdown is called for by a PSO, the shutdown must occur and any dispute resolved only following shutdown.
 - (iv) The vessel operator must establish and maintain clear lines of communication directly between PSOs on duty and crew controlling the acoustic source(s) to ensure that shutdown commands are conveyed swiftly, while allowing PSOs to maintain watch.
 - (v) Upon implementation of a shutdown, survey equipment may be reactivated when all marine mammals that triggered the shutdown have been confirmed by visual observation to have exited the relevant Exclusion Zone or an additional time period has elapsed with no further sighting of the animal that

triggered the shutdown (15 minutes for small odontocetes [i.e., species comprising the family Phocoenidae and the species comprising the genera *Delphinus*, *Lagenorhynchus*, *Stenella* (*frontalis* only), or *Tursiops*], and seals; 30 minutes for all other marine mammals).

- (vi) If acoustic sources are shut down for less than 30 minutes for reasons other than marine mammal mitigation (e.g., due to mechanical or electronic failure) the acoustic sources may be re-activated as soon as is practicable at full operational level if PSOs have maintained constant visual observation during the shutdown and no visual detections of marine mammals occurred within the applicable Exclusion Zone during that time. For a shutdown of 30 minutes or longer, or if visual observation was not continued diligently during the pause, pre-start clearance observation is required, as described in condition 4(e) of this IHA, unless visual observation was continued diligently during the entire pause with no further detections of any marine mammals.
 - (vii) If delphinids from the genera *Delphinus*, *Lagenorhynchus*, *Stenella* (*frontalis* only), *Tursiops* or seals (Table 1) are visually detected approaching the vessel or towed acoustic sources, shutdown is not required. If there is uncertainty regarding identification of a marine mammal species (i.e., whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs must use best professional judgment in making the decision to call for a shutdown
 - (viii) Shutdown of acoustic sources is required upon observation of either a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met, entering or within the Level B harassment zone.
 - (ix) Shutdown, pre-start clearance, and ramp-up procedures are not required during HRG survey operations using only non-impulsive sources (e.g., USBL and parametric sub-bottom profilers) other than non-parametric sub-bottom profilers (e.g., CHIRPs). Pre-clearance and ramp-up, but not shutdown, are required when using non-impulsive, non-parametric sub-bottom profilers.
- (h) Vessel Strike Avoidance – Vessel operators and crews must maintain a vigilant watch for all marine mammals and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any marine mammals. Survey vessel crew members responsible for navigation duties will receive site-specific training on marine mammals sightings/reporting and vessel strike avoidance measures. Vessel strike avoidance measures must include the following, except under circumstances when where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply:

- (i) A visual observer aboard the vessel must monitor a vessel strike avoidance zone based on the appropriate separation distance around the vessel (distances stated below).
- (ii) Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.* PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to 1) distinguish protected species from other phenomena and 2) broadly identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal.
- (iii) All vessels (e.g., source vessels, chase vessels, supply vessels), regardless of size, must observe a 10-knot speed restriction in specific areas designated by NMFS for the protection of North Atlantic right whales from vessel strikes including seasonal management areas (SMAs) and dynamic management areas (DMAs) when in effect;
- (iv) All vessels greater than or equal to 19.8 m in overall length operating from November 1 through April 30 will operate at speeds of 10 knots or less while transiting to and from Project Area;
- (v) All vessels must reduce their speed to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel.
- (vi) All vessels must maintain a minimum separation distance of 500 m from right whales. If a whale is observed but cannot be confirmed as a species other than a right whale, the vessel operator must assume that it is a right whale and take appropriate action.
- (vii) All vessels must maintain a minimum separation distance of 100 m from sperm whales and all other baleen whales.
- (viii) All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel).
- (ix) When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

- (x) These requirements do not apply in any case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.
5. Monitoring Requirements – Mayflower is required to conduct marine mammal visual monitoring during HRG survey activity. Monitoring must be conducted in accordance with the following requirements:
- (a) Visual monitoring must be performed by qualified, NMFS-approved PSOs. PSO resumes must be provided to NMFS for review and approval prior to the start of survey activities.
 - (b) In order to be considered qualified, PSOs must have successfully completed an acceptable PSO training course and/or have demonstrated experience in the role of independent PSO during an HRG survey. On a case-by-case basis, non-independent observers may be approved by NMFS for limited, specific duties in support of approved, independent PSOs on smaller vessels with limited crew capacity operating in nearshore waters.
 - (c) PSOs must be employed by a third-party observer provider, must not have tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards). At least one PSO aboard each acoustic source vessel must have a minimum of 90 days at-sea experience working as a PSO during a geophysical survey, with no more than 18 months elapsed since the conclusion of the at-sea experience. This lead PSO must coordinate duty schedules and roles for the PSO team and serve as primary point of contact for the vessel operator. (Note that the responsibility of coordinating duty schedules and roles may instead be assigned to a shore-based, third-party monitoring coordinator). To the maximum extent practicable, the lead PSO must devise the duty schedule such that experienced PSOs are on duty with those PSOs with appropriate training but who have not yet gained relevant experience.
 - (d) PSOs must coordinate to ensure 360° visual coverage around the vessel from the most appropriate observation posts.
 - (e) PSOs may be on watch for a maximum of four consecutive hours followed by a break of at least two hours between watches and may conduct a maximum of 12 hours of observation per 24-hour period.
 - (f) In cases where multiple vessels are surveying concurrently, any observations of marine mammals must be communicated to PSOs on all active survey vessels.

- (g) PSOs must be equipped with binoculars and have the ability to estimate distances to marine mammals located in proximity to the vessel and/or Exclusion Zones. Reticulated binoculars must be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine species.
- (h) Position data must be recorded using hand-held or vessel global positioning system (GPS) units for each sighting.
- (i) Mayflower must consult NMFS North Atlantic right whale reporting system and Whale Alert, as able, for the presence of NARWs throughout survey operations, and for the establishment of a DMA. If NMFS should establish a DMA in the Lease Areas during the survey, the vessels will abide by speed restrictions in the DMA per the lease conditions.
- (j) Visual PSOs must conduct observations in the following circumstances (in addition to those described in condition 4(b) of this IHA):
 - (i) During good conditions (e.g., daylight hours; Beaufort sea state 3 or less) and no acoustic sources are operating, for comparison of sighting rates and behavior with and without use of the specified acoustic sources and between acquisition periods (to the maximum extent practicable); and
 - (ii) During all daylight hours, when any acoustic sources are active (in addition to those specified in condition 4(a) of this IHA).
- (k) Night-vision equipment (*i.e.*, night-vision goggles and/or infrared technology) must be available for use during nighttime monitoring.
- (l) Any observations of marine mammals by crew members aboard any vessel associated with the survey must be relayed to the PSO team.
- (m) In cases when pre-clearance has begun in conditions with good visibility, including via the use of night-vision equipment, and the lead PSO has determined that the pre-start clearance zones (as described in condition 4(e) of this IHA) are clear of marine mammals, survey operations may commence (*i.e.*, no delay is required) despite brief periods of inclement weather and/or loss of daylight. In cases where Exclusion Zones (as described in condition 4(c) of this IHA) become obscured for brief periods due to inclement weather, survey operations may continue (*i.e.*, no shutdown is required).
- (n) Data on all PSO observations must be recorded based on standard PSO collection requirements. PSOs must use standardized data forms, whether hard copy or electronic. The following information must be reported:

- (i) PSO names and affiliations
- (ii) Dates of departures and returns to port with port name
- (iii) Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort
- (iv) Vessel location (latitude/longitude) when survey effort begins and ends; vessel location at beginning and end of visual PSO duty shifts
- (v) Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change
- (vi) Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon
- (vii) Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions)
- (viii) Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.*, pre-clearance survey, ramp-up, shutdown, end of operations, etc.)
- (ix) If a marine mammal is sighted, the following information should be recorded:
 - (A) Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);
 - (B) PSO who sighted the animal;
 - (C) Time of sighting;
 - (D) Vessel location at time of sighting;
 - (E) Water depth;
 - (F) Direction of vessel's travel (compass direction);

- (G) Direction of animal's travel relative to the vessel;
- (H) Pace of the animal;
- (I) Estimated distance to the animal and its heading relative to vessel at initial sighting;
- (J) Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species;
- (K) Estimated number of animals (high/low/best) ;
- (L) Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);
- (M) Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
- (N) Detailed behavior observations (*e.g.*, number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);
- (O) Animal's closest point of approach and/or closest distance from the center point of the acoustic source;
- (P) Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action.

6. Reporting – Mayflower is required to report to NMFS in accordance with the following requirements:

- (a) A final technical monitoring report must be provided to NMFS within 90 days after completion of survey activities or expiration of this IHA, whichever comes sooner. The report must fully document the methods and monitoring protocols, summarize the data recorded during monitoring, describe, assess, and compare the effectiveness of monitoring and mitigation measures. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS. PSO datasheets or raw sightings data must also be provided with the draft and final monitoring report.

- (b) Reporting sightings of North Atlantic right whales:
- (i) If a North Atlantic right whale is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, Mayflower must immediately report sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System: (866) 755-6622. North Atlantic right whale sightings in any location may also be reported to the U.S. Coast Guard via channel 16.
- (c) Reporting injured or dead marine mammals:
- (i) In the event that personnel involved in the survey activities covered by the authorization discover an injured or dead marine mammal, Mayflower must report to the NMFS New England/Mid-Atlantic Regional Stranding Coordinator by phone (866-755-6622) or by email (*nmfs.gar.stranding@noaa.gov*) as soon as feasible. The report must include the following information:
 - (A) Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
 - (B) Species identification (if known) or description of the animal(s) involved;
 - (C) Condition of the animal(s) (including carcass condition if the animal is dead);
 - (D) Observed behaviors of the animal(s), if alive;
 - (E) If available, photographs or video footage of the animal(s); and
 - (F) General circumstances under which the animal was discovered.
 - (ii) In the event of a vessel strike of a marine mammal by any vessel involved in the activities covered by the authorization, Mayflower must report the incident to the NMFS New England/Mid-Atlantic Regional Stranding Coordinator (866- 755-6622) and NMFS Office of Protected Resources (*PR.ITP.MonitoringReports@noaa.gov*) as soon as feasible. The report must include the following information:
 - (A) Time, date, and location (latitude/longitude) of the incident;
 - (B) Species identification (if known) or description of the animal(s) involved;

- (C) Vessel's speed during and leading up to the incident;
- (D) Vessel's course/heading and what operations were being conducted (if applicable);
- (E) Status of all sound sources in use;
- (F) Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;
- (G) Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
- (H) Estimated size and length of animal that was struck;
- (I) Description of the behavior of the marine mammal immediately preceding and following the strike;
- (J) If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
- (K) Estimated fate of the animal (e.g., dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
- (L) To the extent practicable, photographs or video footage of the animal(s).

7. This Authorization may be modified, suspended or withdrawn if the holder fails to abide by the conditions prescribed herein (including, but not limited to, failure to comply with monitoring or reporting requirements), or if NMFS determines: 1) the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals, or 2) the prescribed measures are likely not or are not effecting the least practicable adverse impact on the affected species or stocks and their habitat.
8. Renewals – On a case-by-case basis, NMFS may issue a one time, one-year Renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical, or nearly identical, activities are planned or (2) the specified activities would not be completed by the time this IHA expires and a Renewal would allow for completion of the activities, provided all of the following conditions are met:

- (a) A request for renewal is received no later than 60 days prior to the needed Renewal IHA effective date (the Renewal IHA expiration date cannot extend beyond one year from expiration of this IHA).
- (b) The request for renewal must include the following:
 - (i) An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed for this IHA, are a subset of the activities, or include changes so minor that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).
 - (ii) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.
- (c) Upon review of the request for Renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings made in support of this IHA remain valid.

Donna S. Wieting,
Director, Office of Protected Resources
National Marine Fisheries Service

Date

Table 1. Numbers of Incidental Take of Marine Mammals Proposed for Authorization

Common Name	Genus / Species	Marine Mammal Category as it Applies to Mitigation Requirements in the IHA	Authorized Takes by Level B Harassment
Fin whale	<i>Balaenoptera physalus</i>	Large whale	6
Sei whale	<i>Balaenoptera borealis</i>	Large whale	6
Minke whale	<i>Balaenoptera acutorostrata</i>	Large whale	15
Humpback whale	<i>Megaptera novaeangliae</i>	Large whale	37
North Atlantic right whale	<i>Eubalaena glacialis</i>	North Atlantic right whale	9
Sperm whale	<i>Physeter macrocephalus</i>	Large whale	6
Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>	Small odontocete	85
Common bottlenose dolphin	<i>Tursiops truncatus</i>	Small odontocete	483
Pilot whales	<i>Globicephala spp</i>	Large odontocete	27
Risso's dolphin	<i>Grampus griseus</i>	Small odontocete	18
Common dolphin	<i>Delphinus delphis</i>	Small odontocete	2,153
Harbor porpoise	<i>Phocoena phocoena</i>	Small odontocete	61
Seals (harbor/gray)	<i>Phoca vitulina/Halichoerus grypus</i>	Seal	989