Best Practices for Offshore Wind Development:
Wildlife Mitigation

This document was developed by the Massachusetts Office of Coastal Zone Management on behalf of the Habitat Working Group on Offshore Wind Energy and in consultation with the Massachusetts Clean Energy Center, Division of Marine Fisheries, and Division of Fisheries and Wildlife. The purpose is to summarize the working group's discussions and recommendations and provide guidance to developers on mitigation measures to protect wildlife potentially impacted by offshore wind projects.

Offshore wind development is accelerating in the United States, with significant leasing and development activity occurring in the Northeast and off the Massachusetts coast. Offshore wind will reduce atmospheric carbon dioxide emissions while helping meet the region's growing energy needs. The protection of wildlife and habitats—including state- and federally protected species and habitats—to maintain biodiversity and ecosystem services is a critical component of offshore wind development. As such, measures to protect wildlife and habitats are required in the environmental reviews, permitting, and consultations with federal, state, and municipal agencies, and increasingly as part of power purchase agreements for offshore wind projects. In addition, voluntary mitigation and monitoring above and beyond permit requirements can help projects achieve a net positive impact on the environment, which in some cases can increase the competitiveness of bids for wind leases or power purchase contracts for developers.

The mitigation hierarchy should be an organizing principle of overall strategies and specific plans to protect wildlife and habitats. The hierarchy used in the Clean Water Act (CWA), National Environmental Policy Act (NEPA), and Massachusetts Environmental Policy Act, among other statutes, consists of a sequence of actions to:

1. Anticipate impacts on the environment, biodiversity, and ecosystem services;
2. Avoid these impacts if possible;
3. Minimize any unavoidable impacts; and
4. Mitigate any remaining unavoidable impacts through:
    a. restoration/rehabilitation of the site if possible, and
    b. compensatory mitigation off-site to offset impacts.

A note on terminology: On-site mitigation (e.g., restoration) and especially off-site mitigation (offsetting) are sometimes referred to in statutes and policy (e.g., CWA Section 404) as compensatory mitigation, or simply "mitigation." Avoidance and minimization are also considered types of mitigation in some statutes (e.g., 40 CFR 1508.1 [NEPA]) and for the purposes of this document.

The following wildlife mitigation practices are recommended by the Habitat Working Group on Offshore Wind Energy:

- Mitigation should account for potential adverse impacts of all phases and components of a project, including pre-construction surveys, construction, operation, and decommissioning, as well as for all associated infrastructure, including wind turbine generators, cables, scour protection, and on- and off-shore substations.
- Special, but not exclusive, attention should be given to potential impacts to and mitigation for state- and federally protected species and habitats.
- Mitigation measures should be accompanied by robust long-term monitoring to ensure they are effective.
- Adaptive management should be expected as new research and monitoring data become available. Developers should plan for the contingency that additional or different mitigation measures will be necessary if mitigation goals are not achieved. Adaptive management may also allow for transition to new, more effective, and potentially more efficient options as they become available. Mitigation plans should include provisions that provide flexibility to adopt new technologies and techniques as they are developed and validated.
- When unavoidable impacts to vulnerable species and habitats are anticipated, and when unavoidable impacts are possible but cannot be accurately predicted due to lack of data, mitigation measures should be implemented proactively and before impacts are detected. If potential impacts do not materialize, proactive mitigation measures can be claimed as a net positive impact by the developer.
- In addition to consulting with regulatory agencies who will be reviewing or permitting the project, developers should consult with relevant working groups including the Massachusetts Habitat Working Group on Offshore Wind Energy and those based in other affected states to ensure that the highest mitigation priorities are being addressed.
- As projects are deployed and monitored, and mitigation plans are implemented, offshore wind developers should collaborate with regional research entities such as the Regional Wildlife Science Collaborative for Offshore Wind and the National Offshore Wind Research & Development Consortium to coordinate research and mitigation efforts across the region.

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